Forward:
A volume dedicated to Bjarni Jónsson
on the occasion of his seventieth birthday

The Jónsson Symposium

Bjarni Jónsson has played a leading role in the development of lattice theory, universal algebra, and algebraic logic for nearly forty years, contributing much to the present-day vitality of these fields. It was inevitable that as his 70th birthday approached, the idea would occur to many people to use the occasion for an international symposium, not only to recognize and celebrate his fundamental contributions, but to assess the present status of these fields and provide a forum for the broadest possible exchange of ideas and results at the leading edge of research.

Organized by an international committee, the Jónsson Symposium took place in Laugarvatn, Iceland, July 2–6, 1990. The scientific program of the Symposium consisted of 19 plenary addresses, 6 fifty-minute lectures, 24 thirty-minute lectures, and three problem sessions. The 32 papers in this present collection, all dedicated to Bjarni Jónsson, arose largely in connection with the Symposium. The Jónsson Symposium attracted 77 participants from 14 countries.

Concerning Bjarni Jónsson

Bjarni Jónsson was born in Draghals, Iceland in 1920. He obtained his Ph.D. in Mathematics in 1946 from the University of California at Berkeley, under the supervision of Alfred Tarski. He held positions at Brown University and the University of Minnesota before becoming Distinguished Professor of Mathematics at Vanderbilt University in 1966. Bjarni Jónsson was awarded the Harvie Branscomb Distinguished Professorship at Vanderbilt in 1974, the Earl Sutherland Prize in 1982, and an Honorary Doctorate from the University of Iceland in 1986. He is an editor of the *Houston Journal of Mathematics* and serves on the editorial boards of two other mathematical journals: *Order* and *Algebra Universalis*. Jónsson has presented major addresses at many mathematical conferences, including the

Tarski Symposium (held at Berkeley in 1971), the International Congress of Mathematicians (Vancouver, 1974), the NATO Advanced Study Institute on Ordered Sets (Banff, 1981), and the Banaschewski Symposium (McMaster University, 1986).

Acknowledgements

Publications of Bjarni Jónsson

1. (with A. Tarski) *Direct decompositions of finite algebraic systems*, Notre Dame Mathematics Lectures, No. 5, 1947, 64 pp.
2. (with A. Tarski) *Cardinal products of isomorphism types, an appendix to A. Tarksi*, Cardinal Algebras, New York, 1949, pp. 253–312.
3. (with H. Federer) *Some properties of free groups*, Trans. Amer. Math. Soc. *68* (1951), 1–27.
4. *A Boolean algebra without proper automorphism*, Proc. Amer. Math. Soc. *2* (1951), 766–770.
5. (with A. Tarski) *Boolean algebras with operators, Part I*, Amer. J. of Math. *73* (1951), 891–939, Part II, ibid. *74* (1952), 127–162.
6. *On the representation of lattices*, Math. Scand. *1* (1953), 193–206.
7. *Modular lattices and Desargues' theorem*, Math. Scand. *2* (1954), 295–314.
8. *Distributive sublattices of a modular lattice*, Proc. Amer. Math. Soc. *6* (1955), 682–688.
9. *A unique decomposition theorem for relational addition, an appendix to A. Tarski*, Ordinal Algebras, Amsterdam, 1956, pp. 99–123.
10. *Universal relational systems*, Math. Scand. *4* (1956), 193–208.
11. *On isomorphism types of groups and other algebraic systems*, Math. Scand. *5* (1957), 224–229.
12. *On direct decompositions of torsion-free Abelian groups*, Math. Scand. *5* (1957), 230–235.
13. *Representations of modular lattices and relation algebras*, Trans. Amer. Math. Soc. *92* (1959), 449–464.
14. *Arguesian lattices of dimension $n \leq 4$*, Math Scand. *7* (1959), 131–145.
15. *Lattice-theoretic approach to projective and affine geometry*, The Axiomatic Method with Special Reference to Geometry and Physics, Amsterdam, 1959, pp. 188–203.
16. *On direct decompositions of torsion-free Abelian groups*, Math. Scand. *7* (1959), 361–371.
17. *Representations of complemented modular lattices*, Trans. Amer. Math. Soc. *97* (1960), 64–97.
18. *Homogeneous universal relational systems*, Math. Scand. *8* (1960), 137–142.
19. *Extensions of von Neumann's coordinatization theorem*, Proc. of Symposia in Pure Mathematics, Vol. *2* (1961), Lattice Theory, pp. 65–70.
20. *Sublattices of a free lattice*, Can. J. of Math. *13* (1961), 256–254.
21. (with F. Galvin) *Distributive sublattices of a free lattice*, Can. J. of Math. *13* (1961), 265–272.
22. (with A. Tarski) *On two properties of free algebras*, Math. Scand. *9* (1961), 95–101.
23. *Defining relations for full semigroups of finite transformations*, Michigan J. of Math. *9* (1962), 77–85.
24. *Representations of relatively complemented modular lattices*, Trans. Amer. Math. Soc. *103* (1962), 272–303.
25. (with J. Kiefer) *Finite sublattices of free lattices*, Can. J. of Math. *14* (1962), 487–497.
26. *Arithmetic properties of freely α-generated lattices*, Can. J. of Math. *14* (1962), 476–481.
27. *Algebraic extensions of relational systems*, Math. Scand. *11* (1962), 179–205.
28. (with P. Crawley) *Direct decompositions of algebraic systems*, Bull. Amer. Math. Soc. *69* (1963), 541–547.
29. (With P. Crawley) *Refinements for infinite direct decompositions of algebraic systems*, Pac. J. of Math. *14* (1964), 797–855.
30. (with C. C. Chang and A. Tarski) *Refinement properties for relational structures*, Fund. Math. *55* (1964), 249–281.
31. *Extensions of relational structures*, The Theory of Models, Amsterdam, 1965, 146–157.
32. *The unique factorization problem for finite relational structures*, Coll. Math. *14* (1966), 1–32.
33. *Algebras whose congruence lattices are distributive*, Math. Scand. *21* (1967), 110–121.
34. *Equational classes of lattices*, Math. Scand. *22* (1968), 187–196.
35. *Algebras with a prescribed automorphism group*, Coll. Math. *19* (1968), 1–4.
36. (with P. Olin) *Almost direct products and saturation*, Logic and Foundations of Mathematics (Vol. *20* of Compositio Mathematica) (1968), 125–132.
37. *On the residuation in the lattice of group varieties*, Scientia Islandica 1968, 14–15.

38. (with G. S. Monk) *Representation of primary Arguesian lattices*, Pacific J. of Math. *30* (1969), 95–139.

39. *Relatively free lattices*, Coll. Math. *21* (1970), 191–196.

40. *Topics in Universal Algebra*, Lecture Notes in Mathematics, No. 250, Springer–Verlag, 1972.

41. *Relatively free products of lattices*, Algebra Universalis *1* (1972), 362–373.

42. *The class of Arguesian lattices in self-dual*, Algebra Universalis *2* (1972), 396.

43. (with G. Grätzer and H. Lakser) *The amalgamation property for equational classes of modular lattices*, Pacific J. of Math. *45* (1973), 507–524.

44. *Some recent trends in general algebra*, Proceeding of the Tarski Symposium, 1971, Proceedings of Symposia in Pure and Appl. Math., *25* (1972), 1–20.

45. (with T. P. Whaley) *Congruence lattices and multiplicity types of algebras*, Pacific J. Math. *50* (1974), 505–520.

46. (with Evelyn Nelson) *Relatively free products in regular varieties*, Algebra Universalis *4* (1974), 14–19.

47. *Sums of finitely based lattice varieties*, Advances in Mathematics *14* (1974), 454–468.

48. (with G. McNulty and R. Quackenbush) *The ascending and descending varietal chains of a variety*, Canad. J. Math. *27* (1975), 25–31.

49. *Varieties of algebras and their congruence varieties*, Proceedings of the 1974 International Congress of Mathematicians, Vol. *1*, pp. 315–320.

50. (with P. Olin) *Elementary equivalence and relatively free products*, Algebra Universalis *6* (1976), 313–326.

51. (with R. Freese) *Congruence modularity implies the Arguesian law*, Algebra Universalis *6* (1976), 225–228.

52. *Identities in congruence varieties*, Lattice Theory, Colloq. Math. Soc. János Bolyai, Vol. *14*, 1976, pp. 195–205.

53. (with J. B. Nation) *A report on sublattices of a free lattice*, Universal Algebra, Colloq. Math. Soc. János Bolyai, Vol. *17* (1977), pp. 223–257.

54. *The variety covering the variety of all modular lattices*, Math. Scand. *41* (1977), 5–14.

55. (with I. Rival) *Lattice varieties covering the smallest non-modular variety*, Pacific J. of Math. *82* (1979), 463–478.

55. *On finitely based varieties of algebras*, Colloq. Math. *42* (1979), 255–261.

57. (with I. Rival) *Critical edges in subdirectly irreducible lattices*, Proc. Amer. Math. Soc. *66* (1977), 194–196.

58. (with D. Duffus and I. Rival) *Structure results for function lattices*, Canad. J. Math. *30* (1978), 392–400.

59. *Varieties of lattices: Some open problems*, Universal Algebra, Colloq. Math. Soc. János Bolyai, Vol. *29* (1982), pp. 421–436.

60. *Congruence varieties*, Algebra Universalis *10* (1980), 355–394.

61. *Congruence varieties, A modified version of #60, an appendix to G. Grätzer*, Universal Algebra, 2nd ed., pp. 348–377.

62. (with R. McKenzie) *Powers of partially ordered sets: Refinement and cancellation properties*, Math. Scand. *51* (1982), 87–120.

63. *Powers of partially ordered sets: The automorphism group*, Math. Scand. *51* (1982), 121–141.

64. *The arithmetic of ordered sets*, pp. 3–42 in Ordered Sets, *Proceedings of the NATO Advanced Study Institute, Banff, Canada*, 1981, Reidel Publishing Co., 1982.

65. *Varieties of relation algebras*, Algebra Universalis *15* (1982), 273–298.

66. *Maximal algebras of binary relations*, pp. 299–307 in Contemporary Mathematics, Vol. *33*, Amer. Math. Soc. (1984).

67. *Amalgamation of pure embeddings*, Algebra Universalis *19* (1984), 266–268.

68. (with A. Day) *The structure of non-Arguesian lattices*, Bull. Amer. Math. Soc. *19* (1985), 157–159.

69. *Arguesian lattices*, Proc. 19th. Nordic Congress of Mathematicians, Reykjavik, 1984 (1985), 78–108.

70. (with A. Day) *A structural characterization of non-Arguesian lattices*, Order 2 (1986), 335–350.

71. *The contributions of Alfred Tarski to general algebra*, J. Symbolic Logic *51* (1986), 883–889.

72. (with J. B. Nation) *Representations of 2-distributive modular lattice of finite length*, Acta Scientiarum Mathematicarum *51* (1987), 123–128.

73. (with A. Day) *Non-Arguesian configurations and gluings in a modular lattice*, Acta Sci. Math. *51* (1987), 309–318.

74. *Relation algebras and Schröder categories*, Discrete Mathematics *70* (1988), 27–45.

75. (with A. Day) *Non-Arguesian configurations and gluings of modular lattices*, Algebra Universalis *26* (1989), 208–215.

76. *Dilworth's work on decompositions in semimodular lattices*, pp. 187–191 in the Dilworth Theorems: Selected Papers by Robert P. Dilworth, Birkhauser, 1990.

77. (with H. Andréka and I. Németi) *Relatively free relation algebras*, pp. 1–15 in Algebraic Logic and Universal Algebra in Computer Science, Lecture Notes in Mathematics, Vol. *425, Springer–Verlag*, 1988.

78. *Amalgamation in small varieties of lattices*, J. Pure, Appl. Algebra *68* (1990), 195–208.

79. (with H. Andréka and I. Németi) *Free algebras in discriminator varieties*, Algebra Universalis *28* (1991), 401–447.

80. *The theory of binary relations*, Colloq. Math. Soc. János Bolyai, *54*, Algebraic Logic, Budapest, Hungary (1988), 245–292.

81. (with Alan Day, Christian Herrmann, J. B. Nation and Doug Pickering) *Small non-Arguesian varieties*, Algebra Universalis (to appear).

82. (with C. Tsinakis) *Relation algebras as residuated Boolean algebras*, Algebra Universalis (to appear).

83. *A survey of Boolean algebras with operators*, pp. 239–286 in Algebras and Order, I. Rosenberg and G. Sabiducci, eds., NATO ASI Series, Kluwer Academic Publishing, 1993.

84. *The preservation theorem for canonical extensions of Boolean algebras with operators*, to appear in Proceedings of the Birkhoff Symposium, Darmstadt, 1991.