

Bibliography on Realizability

Lars Birkedal

School of Computer Science, Carnegie Mellon University

This document is a bibliography on realizability and related matters. It has been collected by Lars Birkedal based on submissions from the participants in “A Workshop on Realizability Semantics and Its Applications,” Trento, Italy, June 30–July 1, 1999. It is available in BIB_TE_X format at the following URL:

<http://www.cs.cmu.edu/~birkedal/realizability-bib.html>

Additions and corrections are very welcome!

Please submit additions and corrections, preferably in BIB_TE_X format, to Lars Birkedal (birkedal@cs.cmu.edu).

References

- [1] M. Abadi and L. Cardelli. *A Theory of Objects*. Springer Verlag, 1996.
- [2] M. Abadi and G.D. Plotkin. A per model of polymorphism and recursive types. In J. Mitchell, editor, *5th Annual IEEE Symposium on Logic in Computer Science*, pages 355–365, Philadelphia, 1990. IEEE Computer Society Press.
- [3] S. Abramsky. Typed realizability. Talk at the workshop on Category Theory and Computer Science in Cambridge, England, August 1995.
- [4] P.H.G. Aczel. A note on interpreting intuitionistic higher-order logic, 1980. Handwritten note.
- [5] T. Altenkirch. *Constructions, Inductive Types and Strong Normalization*. PhD thesis, University of Edinburgh, 1993. Available as report ECS-LFCS-93-279.
- [6] R. Amadio. Recursion over realizability structures. *Information and Computation*, 91:55–85, 1991.
- [7] A. Asperti. The internal model of polymorphic lambda calculus. Technical Report CMU-CS-88-155, Carnegie Mellon University, 1988.
- [8] S. Awodey, L. Birkedal, and D.S. Scott. Local realizability toposes and a modal logic for computability. Presented at *Tutorial Workshop on Realizability Semantics, FLoC'99*, Trento, Italy 1999., 1999.
- [9] S. Bainbridge, P.J. Freyd, A. Scedrov, and P. Scott. Functorial polymorphism. *Theoretical Computer Science*, 70:35–64, 1990.
- [10] F. Barbanera and S. Martini. Proof-functional connectives and realizability. *Archive for Mathematical Logic*, 33:189–211, 1994.
- [11] H.P. Barendregt. Combinatory logic and the axiom of choice. *Indagationes Mathematicae*, 35:203–221, 1973.

- [12] H.P. Barendregt. Introduction to generalized type systems. *Journal of Functional Programming*, 1(2):125–154, 1991.
- [13] M. Barr. Exact categories. In M. Barr, P.A. Grillet, and D. Van Osdol, editors, *Exact Categories and Categories of Sheaves*, volume 236 of *Lecture Notes in Mathematics*, pages 1–120. Springer-Verlag, 1971.
- [14] A. Bauer, L. Birkedal, and D.S. Scott. Equilogical spaces. Submitted for publication, 1998.
- [15] M.J. Beeson. The nonderivability in intuitionistic formal systems of theorems on the continuity of effective operations. *Journal of Symbolic Logic*, 41:321–346, 1975.
- [16] M.J. Beeson. Derived rules of inference related to the continuity of effective operations. *Journal of Symbolic Logic*, 41:328–336, 1976.
- [17] M.J. Beeson. The unprovability in intuitionistic formal systems of continuity of effective operations on the reals. *Journal of Symbolic Logic*, 41:18–24, 1976.
- [18] M.J. Beeson. Continuity and comprehension in intuitionistic formal systems. *Pacific Journal of Mathematics*, 68:29–40, 1977.
- [19] M.J. Beeson. Principles of continuous choice and continuity of functions in formal systems for constructive mathematics. *Archive for Mathematical Logic*, 12:249–322, 1977.
- [20] M.J. Beeson. Continuity in intuitionistic set theories. In M. Boffa, D. van Dalen, and K. McAloon, editors, *Logic Colloquium '78*, pages 1–52. North-Holland Publishing Company, 1979.
- [21] M.J. Beeson. Goodman’s theorem and beyond. *Pacific Journal of Mathematics*, 84:1–28, 1979.
- [22] M.J. Beeson. Extensionality and choice in constructive mathematics. *Pacific Journal of Mathematics*, 88:1–28, 1980.
- [23] M.J. Beeson. Formalizing constructive mathematics: Why and how? In F. Richman, editor, *Constructive Mathematics*, pages 146–190. Springer-Verlag, 1981.
- [24] M.J. Beeson. Recursive models for constructive set theories. *Annals of Pure and Applied Logic*, 23:127–178, 1982.
- [25] M.J. Beeson. *Foundations of constructive mathematics*. Springer-Verlag, 1985.
- [26] M.J. Beeson and A. Scedrov. Church’s thesis, continuity and set theory. *Journal of Symbolic Logic*, 49:630–643, 1984.
- [27] Z.E-L. Benaissa, E. Moggi, W. Taha, and T. Sheard. A categorical analysis of multi-level languages. Manuscript, January 1999.
- [28] P.N. Benton. A mixed linear and non-linear logic: Proofs, terms and models (preliminary report). Technical report, University of Cambridge, 1995.
- [29] S. Berardi, M.A. Bezem, and T. Coquand. On the computational content of the axiom of choice. Technical Report Logic Group Preprint Series, 116, Department of Philosophy, Utrecht University, 1994.
- [30] U. Berger and H. Schwichtenberg. Program extraction from classical proofs. In D. Leivant, editor, *Logic and Computational Complexity. International Workshop LCC '94, Indianapolis, IN, USA, October 1994*, volume 960 of *Lecture Notes in Computer Science*, pages 77–97. Springer-Verlag, 1995.
- [31] U. Berger, H. Schwichtenberg, and M. Seisenberger. From proofs to programs in the Minlog system. The Warshall algorithm and Higman’s lemma, 1997. To appear in *Journal of Automated Reasoning*.

- [32] I. Bethke. *Notes on Partial Combinatory Algebras*. PhD thesis, Universiteit van Amsterdam, 1988.
- [33] M. Bezem. Strongly majorizable functionals of finite type: a model for bar recursion containing discontinuous functionals. *Journal of Symbolic Logic*, 50:652–660, 1985.
- [34] M. Bezem. *Bar Recursion and Functionals of Finite Type*. PhD thesis, Rijksuniversiteit Utrecht, 1986.
- [35] M. Bezem. Compact and majorizable functionals of finite type. *Journal of Symbolic Logic*, 54:271–280, 1989.
- [36] L. Birkedal. Developing theories of types and computability. Thesis Proposal, April 1998.
- [37] L. Birkedal, A. Carboni, G. Rosolini, and D.S. Scott. Type theory via exact categories. In *Proceedings of the 13th Annual IEEE Symposium on Logic in Computer Science*, pages 188–198, Indianapolis, Indiana, June 1998. IEEE Computer Society Press.
- [38] K. Bruce and J.C. Mitchell. Per models of subtyping, recursive types and higher-order polymorphism. In *Proc. 19th ACM Symp. on Principles of Programming*, pages 316–327, 1992.
- [39] W. Buchholz, S. Feferman, W. Pohlers, and W. Sieg. *Iterated Inductive Definitions and Subsystems of Analysis: Recent Proof-Theoretical Studies*. Springer-Verlag, 1981.
- [40] S. Buss. The polynomial hierarchy and intuitionistic bounded arithmetic. In *Structure in Complexity Theory*, volume 223 of *Springer Lecture Notes in Computer Science*, pages 77–103. Springer-Verlag, 1986.
- [41] A. Carboni. Some free constructions in realizability and proof theory. *Journal of Pure and Applied Algebra*, 103:117–148, 1995.
- [42] A. Carboni, P.J. Freyd, and A. Scedrov. A categorical approach to realizability and polymorphic types. In M. Main, A. Melton, M. Mislove, and D.Schmidt, editors, *Mathematical Foundations of Programming Language Semantics*, volume 298 of *Lectures Notes in Computer Science*, pages 23–42, New Orleans, 1988. Springer-Verlag.
- [43] A. Carboni and R. Celia Magno. The free exact category on a left exact one. *Journal of Australian Mathematical Society*, 33(A):295–301, 1982.
- [44] A. Carboni and G. Rosolini. Locally cartesian closed exact completions, 1998. to appear.
- [45] A. Carboni and E.M. Vitale. Regular and exact completions. *Journal of Pure and Applied Algebra*, 125:79–117, 1998.
- [46] L. Cardelli and G. Longo. A semantic basis for Quest. Technical Report 55, Digital Equipment Corporation, 1989.
- [47] C. Cellucci. Operazioni di Brouwer e realizzabilita formalizzata (English summary). *Annali della Scuola Normale Superiore di Pisa. Classe di Scienze. Fisiche e Matriche, Seria III*, 25:649–682, 1971.
- [48] S. Cook and A. Urquhart. Functional interpretations of feasibly constructive arithmetic. *Annals of Pure and Applied Logic*, 63:103–200, 1993.
- [49] T. Coquand, C. Gunter, and G. Winskel. Domain theoretic models of polymorphism. *Information and Computation*, 81:123–167, 1989.
- [50] Th. Coquand. *Une Theorie des Constructions*. PhD thesis, University of Paris VII, 1985.
- [51] Th. Coquand and G. Huet. The calculus of constructions. *Information and Computation*, 76, 1988.

- [52] N.J. Cutland. *Computability*. Cambridge University Press, 1980.
- [53] Z. Damnjanovic. Strictly primitive recursive realizability, I. *Journal of Symbolic Logic*, 59:1210–1227, 1994.
- [54] Z. Damnjanovic. Minimal realizability of intuitionistic arithmetic and elementary analysis. *Journal of Symbolic Logic*, 60:1208–1241, 1995.
- [55] Z. Damnjanovic. Elementary realizability, 1996. Submitted to *Journal of Philosophical Logic*.
- [56] D.H.J. de Jongh. *Investigations of the Intuitionistic Propositional Calculus*. PhD thesis, University of Wisconsin, Madison, 1968.
- [57] D.H.J. de Jongh. The maximality of the intuitionistic predicate calculus with respect to heyting’s arithmetic, 1969. typed manuscript from University of Wisconsin, Madison.
- [58] D.H.J. de Jongh. A characterization of the intuitionistic propositional calculus. In A. Kino, J. R. Myhill, and R. E. Vesley, editors, *Intuitionism and Proof Theory*, pages 211–217. North-Holland Publishing Company, 1970.
- [59] D.H.J. de Jongh. Formulas of one propositional variable in intuitionistic arithmetic. In A. S. Troelstra and D. van Dalen, editors, *The L. E. J. Brouwer Centenary Symposium*, pages 51–64. North-Holland Publishing Company, 1980.
- [60] J. Diller. Functional interpretations of Heyting’s arithmetic in all finite types. *Nieuw Archief voor Wiskunde. Derde Serie*, 27:70–97, 1979.
- [61] J. Diller. Modified realization and the formulae-as-types notion. In J. P. Seldin and J. R. Hindley, editors, *To H.B. Curry: Essays on Combinatory Logic, Lambda Calculus and Formalism*, pages 491–501. Academic Press, New York, 1980.
- [62] J. Diller and W. Nahm. Eine Variante zur Dialectica-Interpretation der Heyting-Arithmetik endlicher Typen. *Archiv*, 16:49–66, 1974.
- [63] A.G. Dragalin. The computability of primitive recursive terms of finite type, and primitive recursive realization (Russian). *Zapiski*, 8:32–45, 1968. Translation *Seminars in Mathematics. V.A. Steklov Mathematical Institute Leningrad* 8(1970), pp. 13–18. This volume appeared as: A.O. Slisenko (ed.), *Studies in Constructive Mathematics and Mathematical Logic. Part II*. Consultants Bureau, New York, London.
- [64] A.G. Dragalin. Transfinite completions of constructive arithmetical calculus (Russian). *Doklady*, 189:458–460, 1969. Translation *SM* 10, pp. 1417–1420.
- [65] A.G. Dragalin. An algebraic approach to intuitionistic models of the realizability type (Russian). In A. I. et.al. Mikhajlov, editor, *Issledovaniya po Neklassicheskim Logikam i Teorii Mnozhestv (Investigations on Non-Classical Logics and Set Theory)*, pages 83–201. Nauka, Moskva, 1979.
- [66] A.G. Dragalin. New forms of realizability and Markov’s rule (Russian). *Doklady*, 251:534–537, 1980. Translation *SM* 21, pp. 461–464.
- [67] A.G. Dragalin. *Mathematical Intuitionism*. American Mathematical Society, 1988. Translation of the Russian original from 1979.
- [68] P. Eggerz. *Realisierbarkeitskalküle ML_0 und vergleichbare Theorien im Verhältnis zur Heyting-Arithmetik*. PhD thesis, Ludwig-Maximilians-Universität, München, 1987.
- [69] Th. Ehrhard. A categorical semantics of constructions. In *Proc. of 3rd Annual Symposium on Logic in Computer Science*. IEEE Computer Soc. Press, 1988.
- [70] Yu.L. Eršov. Computable functionals of finite type. *Algebra i Logika*, 11(4), 1972.
- [71] Yu.L. Eršov. The theory of A-spaces. *Algebra i Logika*, 12(4), 1972.

- [72] Yu.L. Eršov. Theorie der Numerierungen. *Zeitschrift für Math. Log.*, 19(4):289–388, 1973.
- [73] Yu.L. Eršov. Theorie der Numerierungen II. *Zeitschrift für Math. Log.*, 21(6):473–584, 1975.
- [74] Yu.L. Eršov. Model C of partial continuous functionals. In R.O. Gandy and J.M.E. Hyland, editors, *Logic Colloquium '77*, pages 455–467. North Holland Publishing Company, 1977.
- [75] Yu.L. Eršov. Theorie der Numerierungen III. *Zeitschrift für Math. Log.*, 23(4):289–371, 1977.
- [76] S. Feferman. A language and axioms for explicit mathematics. In J.N. Crossley, editor, *Algebra and Logic*, pages 87–139. Springer-Verlag, 1975.
- [77] S. Feferman. Constructive theories of functions and classes. In M. Boffa, D. van Dalen, and K. McAloon, editors, *Logic Colloquium '78*, pages 159–224. North-Holland Publishing Company, 1979.
- [78] F. Ferreira and A. Marques. Extracting algorithms from intuitionistic proofs. Technical Report Pré-publicações de Matemática 26/96, Universidade de Lisboa, 1996.
- [79] M.P. Fourman and D.S. Scott. Sheaves and logic. In M.P. Fourman, C.J. Mulvey, and D.S. Scott, editors, *Applications of Sheaves*, pages 302–401. Springer-Verlag, 1979.
- [80] P.J. Freyd. POLYNAT in PER. In J.W. Gray and A. Scedrov, editors, *Categories in Computer Science and Logic*, volume 92 of *Contemporary Mathematics*, pages 67–68, Boulder, June 1987, 1989. American Mathematical Society.
- [81] P.J. Freyd, P. Mulry, G. Rosolini, and D.S. Scott. Extensional PERs. *Information and Computation*, 98:211–227, 1992.
- [82] P.J. Freyd, E.P. Robinson, and G. Rosolini. Dinaturality for free. In M.P. Fourman, P.T. Johnstone, and A.M. Pitts, editors, *Proceedings of Symposium in Applications of Categories to Computer Science*, pages 107–118. Cambridge University Press, 1992.
- [83] P.J. Freyd and A. Scedrov. *Categories, Allegories*. North Holland Publishing Company, 1991.
- [84] H. M. Friedman and A. Scedrov. Set existence property for intuitionistic theories with dependent choice. *Annals of Pure and Applied Logic*, 25:129–140, 1983. Corrigendum in *APAL* **26** (1984), p.101.
- [85] H.M. Friedman. Some applications of Kleene’s methods for intuitionistic systems. In A. R. D. Mathias and H. Rogers, editors, *Cambridge Summer School in Mathematical Logic*, pages 113–170. Springer-Verlag, 1973.
- [86] H.M. Friedman. The disjunction property implies the numerical existence property. *Proceedings of the National Academy of Sciences of the United States of America*, 72:2877–2878, 1975.
- [87] H.M. Friedman. On the derivability of instantiation properties. *Journal of Symbolic Logic*, 42:506–514, 1977.
- [88] H.M. Friedman. Set theoretic foundations of constructive analysis. *Annals of Mathematics, Series 2*, 105:1–28, 1977.
- [89] H.M. Friedman and A. Scedrov. Large sets in intuitionistic set theory. *Annals of Pure and Applied Logic*, 27:1–24, 1984.
- [90] H.M. Friedman and A. Scedrov. Intuitionistically provable recursive well-orderings. *Annals of Pure and Applied Logic*, 30:165–171, 1986.
- [91] J. Gallier. Proving properties of typed lambda-terms using realizability, covers, and sheaves. Technical Report MS-CIS-93-91, Computer and Information Science

- Department, School of Engineering and Applied Science, University of Pennsylvania, Philadelphia, 1993.
- [92] R.O. Gandy and J.M.E. Hyland. Computable and recursively countable functions of higher type. In *Logic Colloquium '76*. North-Holland, 1977.
 - [93] Yu. V. Gavrilenko. Recursive realizability from the intuitionistic point of view (Russian). *Doklady*, 256:18–22, 1981. Translation *SM 23*, pp. 9–14.
 - [94] J.-Y. Girard, Y. Lafont, and P. Taylor. *Proofs and Types*. Cambridge University Press, Cambridge U.K., 1988.
 - [95] J.-Y. Girard, Y. Lafont, and P. Taylor. *Proofs and Types*, volume 7 of *Cambridge Tracts in Theoretical Computer Science*. Cambridge University Press, 1989.
 - [96] K. Gödel. Zur intuitionistischen arithmetik und zahlentheorie. *Ergebnisse eines mathematisches Kolloquiums*, 4:34–38, 1932.
 - [97] K. Gödel. Über eine bisher noch nicht benützte Erweiterung des finiten Standpunktes. *Dialectica*, 12:280–287, 1958.
 - [98] K. Gödel. *Collected Works, Volume 2*. Oxford University Press, Oxford, 1990.
 - [99] N.D. Goodman. Relativized realizability in intuitionistic arithmetic of all finite types. *Journal of Symbolic Logic*, 43:23–44, 1978.
 - [100] R. Grayson. Notes on realizability, 1982.
 - [101] R.J. Grayson. Heyting-valued models for intuitionistic set theory. In M. Fourman, C. Mulvey, and D.S. Scott, editors, *Application of Sheaves*, volume 743 of *Lecture Notes in Mathematics*, pages 402–414, Berlin, 1979. Springer.
 - [102] R.J. Grayson. Derived rules obtained by a model-theoretic approach to realisability, 1981. Handwritten notes from Münster University.
 - [103] R.J. Grayson. Modified realisability toposes, 1981. Handwritten notes from Münster University.
 - [104] R.J. Grayson. Note on extensional realizability, 1981. Handwritten notes from Münster University.
 - [105] R.J. Grayson. Appendix to modified realisability toposes, 1982. Handwritten notes from Münster University.
 - [106] V. Harnik. Provably total functions of intuitionistic bounded arithmetic. *Journal of Symbolic Logic*, 57:466–477, 1992.
 - [107] V. Harnik and M. Makkai. Lambek’s categorical proof theory and Läuchli’s abstract realizability. *Journal of Symbolic Logic*, 57:200–230, 1992.
 - [108] A. Heyting, editor. *Constructivity in Mathematics*. North-Holland Publishing Company, 1959.
 - [109] D. Higgs. Injectivity in the topos of complete heyting algebra valued sets. *Canadian Journal of Mathematics*, 36(3):550–568, 1984.
 - [110] D. Hilbert and P. Bernays. *Grundlagen der Mathematik I*. Springer Verlag, 1934.
 - [111] M. Hofmann. Syntax and semantics of dependent types. In *Semantic and Logic of Computation*. Cambridge University Press, 1997.
 - [112] M. Hofmann. Semantical analysis of higher-order abstract syntax. In *14th Annual Symposium on Logic in Computer Science*, pages ?–? IEEE Computer Society Press, Washington, 1999.
 - [113] W.A. Howard. To H.B. Curry: The formulae-as-types notion of construction. In J. Hindley and J. Seldin, editors, *Essays on Combinatory Logic, Lambda Calculus, and Formalism*. Academic Press, 1969.

- [114] W.A. Howard. Appendix: Hereditarily majorizable functionals of finite type. In A. S. Troelstra, editor, *Metamathematical Investigation of Intuitionistic Arithmetic and Analysis*, pages 454–461. Springer-Verlag, 1973. With contributions by A. S. Troelstra, A. Smoryński, J. I. Zucker and W. A. Howard.
- [115] J.M.E. Hyland. Filter spaces and continuous functionals. *Annals of Mathematical Logic*, 16, 1979.
- [116] J.M.E. Hyland. The effective topos. In A.S. Troelstra and D. Van Dalen, editors, *The L.E.J. Brouwer Centenary Symposium*, pages 165–216. North Holland Publishing Company, 1982.
- [117] J.M.E. Hyland. A small complete category. *Journal of Pure and Applied Logic*, 40:135–165, 1988.
- [118] J.M.E. Hyland. First steps in synthetic domain theory. In A. Carboni, M.C. Pedicchio, and G. Rosolini, editors, *Category Theory '90*, volume 1144 of *Lectures Notes in Mathematics*, pages 131–156, Como, 1992. Springer-Verlag.
- [119] J.M.E. Hyland, P.T. Johnstone, and A.M. Pitts. Tripos theory. *Math. Proc. Camb. Phil. Soc.*, 88:205–232, 1980.
- [120] J.M.E. Hyland and C.-H. L. Ong. Modified realizability toposes and strong normalization proofs. In J.F. Groote and M. Bezem, editors, *Typed Lambda Calculi and Applications*, volume 664 of *Lecture Notes in Computer Science*, pages 179–194. Springer-Verlag, 1993.
- [121] J.M.E. Hyland, E.P. Robinson, and G. Rosolini. Algebraic types in PER models. In M. Main, A. Melton, M. Mislove, and D.Schmidt, editors, *Mathematical Foundations of Programming Language Semantics*, volume 442 of *Lecture Notes in Computer Science*, pages 333–350, New Orleans, 1990. Springer-Verlag.
- [122] J.M.E. Hyland, E.P. Robinson, and G. Rosolini. The discrete objects in the effective topos. *Proceedings of the London Mathematical Society*, 60:1–60, 1990.
- [123] B. Jacobs. *Categorical Logic and Type Theory*. Elsevier Science, 1999.
- [124] V.A. Jankov. Realizable formulas of propositional logic (Russian). *Doklady*, 151:1035–1037, 1963. Translation *SM* 4, pp. 1146–1148.
- [125] P.T. Johnstone. *Topos Theory*. Number 10 in LMS Mathematical Monographs. Academic Press, London, 1977.
- [126] P.T. Johnstone and I. Moerdijk. Local maps of toposes. *Proc. London Math. Soc.*, 3(58):281–305, 1989.
- [127] P.T. Johnstone and R. Paré, editors. *Indexed Categories and Their Applications*, volume 661 of *Lecture Notes in Mathematics*. Springer-Verlag, Berlin, 1978.
- [128] P.T. Johnstone and E.P. Robinson. A note on inequivalence of realizability toposes. *Mathematical Proceedings of Cambridge Philosophical Society*, 105, 1989.
- [129] A. Joyal and I. Moerdijk. *Algebraic Set Theory*, volume 220 of *London Mathematical Society Lecture Note Series*. Cambridge University Press, Cambridge, 1995.
- [130] F.A. Kabakov. On the derivability of some realizable formulae of the sentential calculus (Russian). *ZMLG*, 9:97–104, 1963.
- [131] F.A. Kabakov. Intuitionistic deducibility of some realizable formulae of propositional logic (Russian). *Doklady*, 192:269–271, 1970. Translation *SM* 11, pp. 612–614.
- [132] F.A. Kabakov. On modelling of pseudo-boolean algebras by realizability (Russian). *Doklady*, 192:16–18, 1970. Translation *SM* 11, pp. 562–564.
- [133] G.M. Kelly and F.W. Lawvere. On the complete lattice of essential localizations. *Bull. Soc. Math. Belg. Ser. A*, XLI(2):289–319, 1989.

- [134] V. Kh. Khakhanyan. Consistency of the intuitionistic set theory with Brouwer's principle. *Matematika*, 5, 1979.
- [135] V. Kh. Khakhanyan. Comparative strength of variants of Church's thesis at the level of set theory (Russian). *Doklady*, 252:1070–1074, 1980. Translation *SM* 21, pp. 894–898.
- [136] V. Kh. Khakhanyan. The consistency of intuitionistic set theory with Church's principle and the uniformization principle (Russian). *Vestnik Moskovskogo Universiteta. Seriya I. Matematika, Mekhanika*, 5:3–7, 1980. Translation *Moscow University Mathematics Bulletin* 35/5, pp. 3–7.
- [137] V. Kh. Khakhanyan. The consistency of intuitionistic set theory with formal mathematical analysis (Russian). *Doklady*, 253:48–52, 1980. Translation *SM* 22, pp. 46–50.
- [138] V. Kh. Khakhanyan. The consistency of some intuitionistic and constructive principles with a set theory. *Studia Logica*, 40:237–248, 1981.
- [139] V. Kh. Khakhanyan. Set theory and Church's thesis (Russian). In A. I. Mikhajlov, editor, *Issledovaniya po Neklascheskims Logikam i Formal'nyim Sistemam (Studies in Nonclassical logics and Formal Systems)*, pages 198–208. Nauka, Moskva, 1983.
- [140] V. Kh. Khakhanyan. Nonderivability of the uniformization principle from Church's thesis (Russian). *Matematicheskie Zametki*, 43:685–691, 703, 1988. Translation *Mathematical Notes* 43, pp. 394–398.
- [141] M.M. Kipnis. The constructive classification of arithmetic predicates and the semantic bases of arithmetic (Russian). *Zapiski*, 8:53–65, 1968. Translation *Seminars in Mathematics. V.A.Steklov Mathematical Institute Leningrad* 8(1970), pp. 22–27. This volume appeared as: A.O. Slisenko (ed.), *Studies in Constructive Mathematics and Mathematical Logic. Part II*. Consultants Bureau, New York, London.
- [142] M.M. Kipnis. On the realizations of predicate formulas (Russian) (English summary). *Zapiski*, 20:40–48, 1971. Translation *Journal of Soviet Mathematics* 1(1973), pp. 22–27.
- [143] S. C. Kleene. Realizability. In *Summaries of Talks presented at the Summer Institute for Symbolic Logic*, pages 100–104. Institute for Defense Analyses, Communications Research Division, Princeton, 1957. Also in [108], pp. 285–289. Errata in [157], page 192.
- [144] S.C. Kleene. On the interpretation of intuitionistic number theory. *Journal of Symbolic Logic*, 10:109–124, 1945.
- [145] S.C. Kleene. *Introduction to metamathematics*. North-Holland Publishing Company, 1952. Co-publisher: Wolters-Noordhoff; 8th revised ed.1980.
- [146] S.C. Kleene. Countable functionals. In A. Heyting, editor, *Constructivity in Mathematics*, pages 81–100. North Holland Publishing Company, 1959.
- [147] S.C. Kleene. Recursive functionals and quantifiers of finite types I. *Trans. Amer. Math. Soc.*, 91, 1959.
- [148] S.C. Kleene. Realizability and Shanin's algorithm for the constructive deciphering of mathematical sentences. *Logique et Analyse, Nouvelle Série*, 3:154–165, 1960.
- [149] S.C. Kleene. Disjunction and existence under implication in elementary intuitionistic formalisms. *Journal of Symbolic Logic*, 27:11–18, 1962. Addenda in *JSL* 28 (1963), pp. 154–156.
- [150] S.C. Kleene. Recursive functionals and quantifiers of finite types II. *Trans. Amer. Math. Soc.*, 108, 1963.
- [151] S.C. Kleene. Classical extensions of intuitionistic mathematics. In Y. Bar-Hillel, editor, *LMPS* 2, pages 31–44. North-Holland Publishing Company, 1965.

- [152] S.C. Kleene. Logical calculus and realizability. *Acta Philosophica Fennica*, 18:71–80, 1965.
- [153] S.C. Kleene. Constructive functions in “The Foundations of Intuitionistic Mathematics”. In B. van Rootselaar and J. F. Staal, editors, *LMPs 3*, pages 137–144. North-Holland Publishing Company, 1968.
- [154] S.C. Kleene. *Formalized Recursive Functionals and Formalized Relizability*, volume 89 of *Memoirs of the American Mathematical Society*. American Mathematical Society, 1969.
- [155] S.C. Kleene. Realizability: a retrospective survey. In A.R.D. Mathias and H. Rogers, editors, *Cambridge Summer School in Mathematical Logic*, volume 337 of *Lecture Notes in Mathematics*, pages 95–112. Springer-Verlag, 1973.
- [156] S.C. Kleene. Recursive functionals and quantifiers of finite types revisited I. In J.E. Fenstad, R.O. Gandy, and G.E. Sacks, editors, *Generalized Recursion Theory II*, pages 185–222, 1978.
- [157] S.C. Kleene and R.E. Vesley. *The Foundations of Intuitionistic Mathematics, especially in relation to recursive functions*. North-Holland Publishing Company, 1965.
- [158] S. Kobayashi and M. Tatsuta. Realizability interpretation of generalized inductive definitions. *Theoretical Computer Science*, 131:121–138, 1994.
- [159] U.W. Kohlenbach. *Theorie der majorisierbaren und stetigen Funktionale und ihre Anwendung bei der Extraktion von Schranken aus inkonstruktiven Beweisen: effektive Eindeutigkeitsmodule bei besten Approximationen aus ineffektiven Eindeutigkeitsbeweisen*. PhD thesis, J.W. Goethe-Universität, Frankfurt am Main, 1990.
- [160] U.W. Kohlenbach. Pointwise hereditary majorization and some applications. *Archive for Mathematical Logic*, 31:227–241, 1992.
- [161] G. Kreisel. A variant to Hilbert’s theory of the foundations of arithmetic. *British Journal for the Philosophy of Science*, 4:107–127, 1953.
- [162] G. Kreisel. Interpretation of analysis by means of functionals of finite type. In A. Heyting, editor, *Constructivity in Mathematics*, pages 101–128. North-Holland, 1959.
- [163] G. Kreisel. Foundations of intuitionistic logic. In E. Nagel, P. Suppes, and A. Tarski, editors, *LMPs*, pages 198–210. Stanford University Press, Stanford, 1962.
- [164] G. Kreisel. On weak completeness of intuitionistic predicate logic. *Journal of Symbolic Logic*, 27:139–158, 1962.
- [165] G. Kreisel and A.S. Troelstra. Formal systems for some branches of intuitionistic analysis. *Annals of Pure and Applied Logic*, 1:229–387, 1970. Addendum in *APAL* 3, pp. 437–439.
- [166] M.D. Krol’. Disjunctive and existential properties of intuitionistic analysis with Kripke’s scheme (Russian). *Doklady*, 234, 1977. Translation *SM* 18, pp. 755–758.
- [167] M.D. Krol’. Various forms of the continuity principle (Russian). *Doklady*, 271:33–36, 1983. Translation *SM* 28, pp. 27–30.
- [168] M.D. Krol’. On a version of realizability (Russian). In *XI Interrepublican Conference on Mathematical Logic, University of Kazan, October 6–8, 1992*, page 81, 1992.
- [169] S.A. Kurtz, J.C. Mitchell, and M.J. O’Donnell. Connecting formal semantics to constructive intuitions. Technical Report CS 92–01, Department of Computer Science, University of Chicago, 1992.
- [170] J. Lambek and P. J. Scott. *Introduction to Higher Order Categorical Logic*. Cambridge University Press, Cambridge, 1986.

- [171] J. Lambek and P.J. Scott. Intuitionistic type theory and the free topos. *Journal of Pure and Applied Algebra*, 19:215–257, 1980.
- [172] J. Lambek and P.J. Scott. Independence of premisses and the free topos. In *Proc. Symp. Constructive Math*, volume 873 of *Lecture Notes in Mathematics*, pages 191–207, 1981.
- [173] J. Lambek and P.J. Scott. New proofs of some intuitionistic principles. *Zeitschrift für Math. Log.*, 29:493–504, 1983.
- [174] H. Läuchli. An abstract notion of realizability for which intuitionistic predicate calculus is complete. In A. Kino, J.R. Myhill, and R.E. Vesley, editors, *Intuitionism and Proof Theory*, pages 227–234. North-Holland, 1970.
- [175] F. W. Lawvere. Diagonal arguments and cartesian closed categories. In *Category Theory, Homology Theory and their Applications, II (Battelle Institute Conference, Seattle, Wash., 1968, Vol. Two)*, pages 134–145. Springer-Verlag, Berlin, 1969.
- [176] F.W. Lawvere. Adjointness in foundations. *Dialectica*, 23:281–296, 1969.
- [177] F.W. Lawvere. Equality in hyperdoctrines and the comprehension schema as an adjoint functor. In A. Heller, editor, *Applications of Categorical Algebra*, pages 1–14. American Mathematical Society, Providence RI, 1970.
- [178] F.W. Lawvere. Toposes generated by codiscrete objects in combinatorial topology and functional analysis. Notes for Colloquium lectures given at North Ryde, New South Wales, Australia on April 18, 1989 and at Madison, USA, on December 1, 1989, 1989.
- [179] F.W. Lawvere. Some thoughts on the future of category theory. In A. Carboni, M.C. Pedicchio, and G. Rosolini, editors, *Category Theory. Proceedings of the International Conference held in Como, Italy, July 22–28, 1990*, volume 1488 of *Lecture Notes in Mathematics*, pages 1–13. Springer-Verlag, 1991.
- [180] V. Lifschitz. CT_0 is stronger than $CT_0!$ *Proceedings of the American Mathematical Society*, 73:101–106, 1979.
- [181] V. Lifschitz. Constructive assertions in an extension of classical mathematics. *Journal of Symbolic Logic*, 47:359–387, 1982.
- [182] V. Lifschitz. Calculable natural numbers. In S. Shapiro, editor, *Intensional Mathematics*, pages 173–190. North-Holland, 1985.
- [183] J. Lipton. Constructive Kripke semantics and realizability. In Y.N. Moschovakis, editor, *Logic from Computer Science*. Springer, 1990. Also as a Technical Report, from Cornell University, nr.90–71.
- [184] J. Lipton and M.J. O’Donnell. Some intuitions behind realizability semantics for constructive logic: Tableaux and Läuchli countermodels. *Annals of Pure and Applied Logic*, 81:187–239, 1996.
- [185] J. Longley. *Realizability Toposes and Language Semantics*. PhD thesis, Edinburgh University, 1995.
- [186] J. Longley. The sequentially realizable functionals. Technical Report ECS-LFCS-98-402, University of Edinburgh, 1998.
- [187] J.R. Longley and A.K. Simpson. A uniform approach to domain theory in realizability models. *Mathematical Structures in Computer Science*, 7:469–505, 1997.
- [188] G. Longo and L. Cardelli. A semantic basis for quest. *Journal of Functional Programming*, 1(4):417–458, 1991.
- [189] G. Longo and E. Moggi. Cartesian closed categories of enumerations for effective type structures. In G. Kahn, D. MacQueen, and G. Ploppin, editors, *Semantics of Data Types*, volume 173 of *Lecture Notes in Computer Science*. Springer-Verlag, 1984.

- [190] G. Longo and E. Moggi. The hereditary partial effective functionals and recursion theory in higher type. *Journal of Symbolic Logic*, 49:127–140, 1984.
- [191] G. Longo and E. Moggi. Constructive natural deduction and its ω -set interpretation. *Mathematical Structures in Computer Science*, 1:215–254, 1991.
- [192] Z. Luo. *An Extended Calculus of Constructions*. PhD thesis, University of Edinburgh, 1990. Available as report ECS-LFCS-90-118.
- [193] Z. Luo. Program specification and data refinement in type theory. *Mathematical Structures in Computer Science*, 3, 1993.
- [194] Z. Luo. *Computation and Reasoning – A Type Theory for Computer Science*, volume 11 of *Monographs on Computer Science*. Oxford University Press, 1994.
- [195] M. Makkai. The fibrational formulation of intuitionistic predicate logic. I: Completeness according to Gödel, Kripke, and Läuchli. *Notre Dame Journal of Formal Logic*, 34:334–377, 1993.
- [196] M. Makkai and G.E. Reyes. *First Order Categorical Logic*, volume 611 of *Lecture Notes in Mathematics*. Springer-Verlag, Berlin, 1977.
- [197] L.L. Maksimova, V.B. Shekhtman, and D.P. Skvortsov. The impossibility of a finite axiomatization of Medvedev’s logic of finitary problems (Russian). *Doklady*, 245:1051–1054, 1979. Translation *SM* 20, pp. 394–398.
- [198] P. Martin-Löf. An intuitionistic theory of types, predicative part. In *Logic Colloquium 1973*, pages 73–118, 1975.
- [199] P. Martin-Löf. Constructive mathematics and computer programming. In L.J. Cohen, J. Los, H. Pfeiffer, and K.-P. Podewski, editors, *LMPS 6*, pages 153–175. North-Holland, 1982.
- [200] P. Martin-Löf. *Intuitionistic Type Theory. Notes by Giovanni Sambin of a series of lectures given in Padua, June 1980*. Bibliopolis, Napoli, 1984.
- [201] D.C. McCarty. Information systems, continuity and realizability. In E. Clarke and D. Kozen, editors, *Logics of Programs*, volume 164 of *Lecture Notes in Computer Science*, pages 341–359. Springer, 1984.
- [202] D.C. McCarty. Information systems, continuity and realizability. In E. Clarke and D. Cozen, editors, *Logics of Programs*, volume 164 of *Lecture Notes in Computer Science*. Springer-Verlag, 1984.
- [203] D.C. McCarty. *Realizability and Recursive Mathematics*. D.Phil. Thesis, University of Oxford, 1984.
- [204] D.C. McCarty. Realizability and recursive mathematics. Technical Report CMU-CS-84-131, Department of Computer Science, Carnegie-Mellon University, 1984. Report version of the author’s PhD thesis, Oxford University 1983.
- [205] D.C. McCarty. Subcountability under realizability. *The Notre Dame Journal of Formal Logic*, 27:210–220, 1986.
- [206] D.C. McCarty. Markov’s principle, isols and Dedekind finite sets. *Journal of Symbolic Logic*, 53:1042–1069, 1988.
- [207] D.C. McCarty. Polymorphism and apartness. *The Notre Dame Journal of Formal Logic*, 32:513–532, 1991.
- [208] C. McLarty. *Elementary Categories, Elementary Toposes*. Clarendon Press, 1995.
- [209] Yu.T. Medvedev. Finite problems (Russian). *Doklady*, 142:1015–1018, 1962. Translation *SM* 3, pp. 227–230.
- [210] Yu.T. Medvedev. Interpretation of logical formulae by means of finite problems and its relation to the realizability theory (Russian). *Doklady*, 148:771–774, 1963. Translation *SM* 4, pp. 180–183.

- [211] Yu.T. Medvedev. Interpretation of logical formulae by means of finite problems (Russian). *Doklady*, 169:20–23, 1966. Translation *SM* 7, pp. 857–860.
- [212] Yu.T. Medvedev. A method for proving the unsolvability of algorithmic problems (Russian). *Doklady*, 185:1232–1235, 1969. Translation *SM* 10, pp. 495–498.
- [213] Yu.T. Medvedev. Locally finitary algorithmic problems (Russian). *Doklady*, 203:285–288, 1972. Errata *Ibidem* 204, pp. 1286. Translation *SM* 13, pp. 382–386.
- [214] Yu.T. Medvedev. An interpretation of intuitionistic number theory. In P. Suppes, G.C. Moisil, and A. Joja, editors, *LMPS 4*, pages 129–136. North-Holland, 1973.
- [215] R. Milner, M. Tofte, and R. Harper. *The Definition of Standard ML*. MIT Press, 1990.
- [216] G.E. Mints. The completeness of provable realizability. *The Notre Dame Journal of Formal Logic*, 30:420–441, 1989.
- [217] J.C. Mitchell. *Foundations of Programming Languages*. MIT Press, 1996.
- [218] E. Moggi. Partial morphisms in categories of effective objects. *Information and Computation*, 76, 1988.
- [219] J.R. Moschovakis. Disjunction and existence in formalized intuitionistic analysis. In J.N. Crossley, editor, *Sets, Models, and Recursion Theory*, pages 309–331. North-Holland, 1967.
- [220] J.R. Moschovakis. Can there be no nonrecursive functions? *Journal of Symbolic Logic*, 36:309–315, 1971.
- [221] J.R. Moschovakis. A topological interpretation of second-order intuitionistic arithmetic. *Compositio Mathematica*, 26:261–275, 1973.
- [222] J.R. Moschovakis. Kleene’s realizability and “divides” notions for formalized intuitionistic mathematics. In K.J. Barwise, H.J. Keisler, and K. Kunen, editors, *The Kleene Symposium*, pages 167–179. North-Holland, 1980.
- [223] J.R. Moschovakis. A disjunctive decomposition theorem for classical theories. In F. Richman, editor, *Constructive Mathematics*, pages 250–259. Springer, 1981.
- [224] J.R. Moschovakis. An intuitionistic theory of lawlike, choice and lawless sequences. In *Logic Colloquium '90*, pages 191–209. Springer, 1993. (Lecture Notes in Logic 2).
- [225] J.R. Moschovakis. More about relatively lawless sequences. *Journal of Symbolic Logic*, 59:813–829, 1994.
- [226] J.R. Moschovakis. A classical view of the intuitionistic continuum. *Annals of Pure and Applied Logic*, 81:9–24, 1996.
- [227] P. Mulry. Generalized Banach-Mazur functionals in the topos of recursive sets. *Journal of Pure and Applied Algebra*, 26:71–83, 1982.
- [228] J.R. Myhill. A note on indicator-functions. *Proceedings of the American Mathematical Society*, 29:181–183, 1973.
- [229] J.R. Myhill. Some properties of intuitionistic Zermelo-Fraenkel set theory. In A.R.D. Mathias and H. Rogers, editors, *Cambridge Summer School in Mathematical Logic*, pages 206–231. Springer, 1973.
- [230] J.R. Myhill. Constructive set theory. *Journal of Symbolic Logic*, 40:347–382, 1975.
- [231] D. Nelson. Recursive functions and intuitionistic number theory. *Transactions of the American Mathematical Society*, 61:307–368, 556, 1947.
- [232] B. Nordström, K. Petersson, and J.M. Smith. *Programming in Martin Löf’s Type Theory*, volume 7 of *Monographs on Computer Science*. Oxford University Press, 1990.

- [233] W. Phoa. Relative computability in the effective topos. *Mathematical Proceedings of the Cambridge Philosophical Society*, 106:419–420, 1989.
- [234] W. Phoa. *Domain Theory in Realizability Toposes*. PhD thesis, Cambridge University, 1990.
- [235] W. Phoa. Effective domains and intrinsic structure. In J. Mitchell, editor, *Proceedings of the 5th Annual IEEE Symposium on Logic in Computer Science*, pages 366–377, Philadelphia, Pennsylvania, 1990. IEEE Computer Society Press.
- [236] W.K.-S. Phoa. Relative computability in the effective topos. *Math. Proc. Camb. Phil. Soc.*, 106, 1989.
- [237] W.K.-S. Phoa. From term models to domains. In *Proceedings of Theoretical Aspects of Computer Software, Sendai*. Springer LNCS 526, 1991.
- [238] W.K.-S. Phoa. Building domains from graph models. *Mathematical Structures in Computer Science*, 2, 1992.
- [239] W.K.-S. Phoa. An introduction to fibrations, topos theory, the effective topos and modest sets. Technical Report ECS-LFCS-92-208, Department of Computer Science, University of Edinburgh, 1992.
- [240] A.M. Pitts. *The Theory of Triposes*. PhD thesis, Cambridge University, 1981.
- [241] A.M. Pitts. Conceptual completeness for first order intuitionistic logic: an application of categorical logic. *Annals Pure Applied Logic*, 41:33–81, 1989.
- [242] A.M. Pitts. On an interpretation of second order quantification in first order intuitionistic propositional logic. *Jour. Symbolic Logic*, 57:33–52, 1992.
- [243] A.M. Pitts. Categorical logic. Technical Report 367, University of Cambridge Computer Laboratory, 1995. To appear as a chapter of *Handbook of Logic in Computer Science, Vol. V* (Oxford University Press).
- [244] V.E. Plisko. On realizable predicate formulae (Russian). *Doklady*, 212:553–556, 1973. Translation *SM* 14, pp. 1420–1424.
- [245] V.E. Plisko. A certain formal system that is connected with realizability (Russian). In B.A. Kushner and N.M. Nagornyi, editors, *Teoriya Algorifmov i Matematicheskaya Logika: Sbornik Statej (Theory of Algorithms and Mathematical Logic. Collection of articles dedicated to Andrej Andrejevich Markov)*, pages 148–158, 215. Vychislitel’nyj Tsentri Akademii Nauk SSSR, 1974.
- [246] V.E. Plisko. On interpretations of predicate formulae that are connected with constructive logic (Russian). In *3 Vsesoyuznaya Konferentsiya po Matematicheskoy Logike. Tezitsy Doklady i Soobshcheniya (3rd All-Union Conference on Mathematical Logic)*, pages 170–172, 1974.
- [247] V.E. Plisko. Recursive realizability and constructive predicate logic (Russian). *Doklady*, 214:520–523, 1974. Translation *SM* 15, pp. 193–197.
- [248] V.E. Plisko. Some variants of the notion of realizability for predicate formulas (Russian). *Doklady*, 226:61–64, 1976. Translation *SM* 17, pp. 59–63.
- [249] V.E. Plisko. The nonarithmeticity of the class of realizable predicate formulas (Russian). *Izv. Akad. Nauk.*, 41:483–502, 1977. Translation *Math. Izv.* 11, pp. 453–471.
- [250] V.E. Plisko. Some variants of the notion of realizability for predicate formulas (Russian). *Izv. Akad. Nauk.*, 42:637–653, 1978. Translation *Math. Izv.* 12, pp. 588–604.
- [251] V.E. Plisko. Absolute realizability of predicate formulas (Russian). *Izv. Akad. Nauk.*, 47:315–334, 1983. Translation *Math. Izv.* 22, pp. 291–308.
- [252] V.E. Plisko. On the concept of relatively uniform realizability of propositional formulas (Russian). *Vestnik Moskovskogo Universiteta Seriya I. Matematika, Mekhanika,*

- pages 77–79, 1992. Translated in *Moscow University Mathematics Bulletin* 47 (1992), 41–42.
- [253] M.B. Pour-El and J.I. Richards. *Computability in Analysis and Physics*. Springer-Verlag, 1989.
- [254] M. Proietti. Connections between partial maps categories and tripos theory. In *Category Theory and Computer Science (Edinburgh, 1987)*, volume 283 of *Lecture Notes in Computer Science*, pages 254–269. Springer-Verlag, Berlin, 1987.
- [255] G.R. Renardel de Lavalette. *Theories with Type-free Application and Extended Bar Induction*. PhD thesis, Universiteit van Amsterdam, 1984.
- [256] G.R. Renardel de Lavalette. Extended bar induction in applicative theories. *Annals of Pure and Applied Logic*, 50:139–189, 1990.
- [257] B. Reus. *Program Verification in Synthetic Domain Theory*. Dokt.Diss., Ludwig-Maximilians-Universität München, 1995. Shaker Verlag, Aachen.
- [258] B. Reus. Synthetic domain theory in type theory: Another logic of computable functions. In J. von Wright, J. Grundy, and J. Harrison, editors, *Theorem Proving in Higher Order Logics: 9th International Conference, TPHOLs'96*, volume 1125 of *Lecture Notes in Computer Science*, pages 363–381. Springer, 1996.
- [259] B. Reus. Extensional Σ -spaces in type theory. *Applied Categorical Structures*, 1999. To Appear.
- [260] B. Reus and T. Streicher. General synthetic domain theory—a logical approach. *Mathematical Structures in Computer Science*, 9:177–223, 1999.
- [261] E.P. Robinson. How complete is PER? In A.R. Meyer, editor, *Proceedings of the 4th Annual IEEE Symposium on Logic in Computer Science*, pages 106–111, Asilomar, 1989. IEEE Computer Society Press.
- [262] E.P. Robinson and G. Rosolini. Colimit completions and the effective topos. *Journal of Symbolic Logic*, 55:678–699, 1990.
- [263] T.T. Robinson. Interpretations of Kleene’s metamathematical predicate $\Gamma \mid A$ in intuitionistic arithmetic. *Journal of Symbolic Logic*, 30:140–154, 1965.
- [264] G.F. Rose. Propositional calculus and realizability. *Transactions of the American Mathematical Society*, 75:1–19, 1953.
- [265] J. Rosický. Cartesian closed exact completions. Available from the Hypatia Electronic Library: <http://hypatia.dcs.qmw.ac.uk>, 1997.
- [266] G. Rosolini. *Continuity and Effectiveness in Topoi*. PhD thesis, University of Oxford, 1986.
- [267] G. Rosolini. Categories and effective computations. In D.H. Pitt, A. Poigné, and D.E. Rydeheard, editors, *Category Theory and Computer Science*, volume 283 of *Lecture Notes in Computer Science*, pages 1–11, Edinburgh, 1987. Springer-Verlag.
- [268] G. Rosolini. About modest sets. *International Journal of Foundations of Computer Science*, 1:341–353, 1990.
- [269] G. Rosolini. An ExPer model for Quest. In S. Brookes, M. Main, A. Melton, M. Mislove, and D. Schmidt, editors, *MFPS'91*, volume 598 of *Lecture Notes in Computer Science*, pages 436–445. Springer, 1991.
- [270] B. Scarpellini. A model for intuitionistic analysis. *Commentarii Mathematici Helvetici*, 45:440–471, 1970.
- [271] B. Scarpellini. A new realizability notion for intuitionistic analysis. *ZLGM*, 23:137–167, 1977.

- [272] A. Scedrov. Differential equations in constructive analysis and in the recursive realizability topos. *Journal of Pure and Applied Algebra*, 33:69–80, 1984.
- [273] A. Scedrov. On the impossibility of explicit upper bounds on lengths of some provably finite algorithms in computable analysis. *Annals of Pure and Applied Logic*, 32:291–297, 1986.
- [274] A. Scedrov. Recursive realizability semantics for Calculus of Constructions. Preliminary report. In G. Huet, editor, *Logical Foundations of Functional Programming*, pages 419–430. Addison-Wesley Publishing Company, 1990.
- [275] A. Scedrov and P. J. Scott. A note on the Friedman slash and Freyd covers. In A.S. Troelstra and D. van Dalen, editors, *The L.E.J. Brouwer Centenary Symposium*, pages 443–452. North-Holland, 1982.
- [276] A. Scedrov and R.E. Vesley. On a weakening of Markov’s principle. *Archiv*, 23:153–160, 1983.
- [277] D.S. Scott. Extending the topological interpretation to intuitionistic analysis. *Compositio Mathematica*, 20:194–210, 1968.
- [278] D.S. Scott. Data types as lattices. *SIAM Journal of Computing*, 5(3):522–587, 1976.
- [279] D.S. Scott. Relating theories of the λ -calculus. In R. Hindley and J. Seldin, editors, *To H.B. Curry: Essays in Combinatory Logic, Lambda Calculus and Formalisms*, pages 403–450. Academic Press, 1980.
- [280] D.S. Scott. Church’s thesis and a unification of types, 1986.
- [281] D.S. Scott. A new category? Domains, spaces and equivalence relations. Manuscript, 1996.
- [282] D.S. Scott, S. Awodey, A. Bauer, L. Birkedal, and J. Hughes. Logics of Types and Computation at Carnegie Mellon University.
<http://www.cs.cmu.edu/Groups/LTC/>.
- [283] P. Scowcroft. The disjunction and numerical existence properties for intuitionistic analysis. In J.N. Crossley, J.B. Remmel, R.A. Shore, and M.E. Sweedler, editors, *Logical Methods*, pages 747–781. Birkhäuser Boston, Inc., Boston MA, 1993.
- [284] N.A. Shanin. On the constructive interpretation of mathematical judgements (Russian). *Trudy Ordena Lenina Matematicheskogo Instituta imeni V. A. Steklova. Akademiya Nauk SSSR*, 52:226–311, 1958. Translation *AMS Transl.* 23, pp. 108–189.
- [285] N.A. Shanin. Über einen Algorithmus zur konstruktiven Dechiffrierung mathematischer Urteile (Russian) (German summary). *ZLGM*, 4:293–303, 1958.
- [286] N.A. Shanin. Concerning the constructive interpretation of auxiliary formulas I (Russian). *Trudy Ordena Lenina Matematicheskogo Instituta imeni V. A. Steklova. Akademiya Nauk SSSR*, 72:348–379, 1964. Translation *AMS Transl.* 99, pp. 233–275.
- [287] J.M. Smith. An interpretation of Kleene’s slash in type theory. In G. Huet and G. Plotkin, editors, *Logical Environments*, pages 189–197, 1993.
- [288] J. Staples. Combinator realizability of constructive finite type analysis. In A.R.D. Mathias and H. Rogers, editors, *Cambridge Summer School in Mathematical Logic*, pages 253–273. Springer, 1973.
- [289] J. Staples. Combinator realizability of constructive Morse theory. *Journal of Symbolic Logic*, 39:226–234, 1974.
- [290] M. Stein. Interpretationen der Heyting–Arithmetik endlicher Typen. *Archiv*, 19:175–189, 1979.
- [291] M. Stein. Interpretations of Heyting’s arithmetic – An analysis by means of a language with set symbols. *AML*, 19:1–31, 1980.

- [292] M. Stein. A general theorem on existence theorems. *ZLGM*, 27:435–452, 1981.
- [293] T. Strahm. Partial applicative theories and explicit substitutions. Technical Report IAM 93–008, Institut für Informatik und angewandte Mathematik, Universität Bern, 1993.
- [294] T. Streicher. Mathematical independencies in the pure calculus of constructions. Technical Report MIP–909, Fakultät für Mathematik und Informatik, Universität Passau, 1991.
- [295] T. Streicher. *Semantics of Type Theory, Correctness, Completeness and Independence Results*. Birkhäuser, 1991.
- [296] T. Streicher. Dependence and independence results for (impredicative) calculi of dependent types. *Mathematical Structures in Computer Science*, 2:29–54, 1992.
- [297] T. Streicher. Independence of the induction principle and the axiom of choice in the pure calculus of constructions. *Theoretical Computer Science*, 103:395–408, 1992.
- [298] T. Streicher. Investigations into intensional type theory. Habilitationsschrift, Universität München, 1994.
- [299] M.D.G. Swaen. *Weak and Strong Sum-Elimination in Intuitionistic Type Theory*. PhD thesis, Universiteit van Amsterdam, 1989.
- [300] M.D.G. Swaen. The logic of first-order intuitionistic type theory with weak sigma-elimination. *Journal of Symbolic Logic*, 56:467–483, 1991.
- [301] M.D.G. Swaen. A Characterization of **ML** in Many-Sorted Arithmetic with Conditional Application. *Journal of Symbolic Logic*, 57:924–953, 1992.
- [302] W.W. Tait. A realizability interpretation of the theory of species. In R.J. Parikh, editor, *Logic Colloquium*, pages 240–251. Springer, 1975.
- [303] W.W. Tait. A realizability interpretation of the theory of species. In R. Parikh, editor, *Logic Colloquium*, volume 453 of *Lectures Notes in Mathematics*, pages 240–251, Boston, 1975. Springer-Verlag.
- [304] M. Tatsuta. Monotone recursive definition of predicates and its realizability interpretation. In *Proceedings of Theoretical Aspects of Computer Software*, pages 38–52. Springer, 1991.
- [305] M. Tatsuta. Program synthesis using realizability. *Theoretical Computer Science*, 90:309–353, 1991.
- [306] M. Tatsuta. Realizability interpretation of coinductive definitions and program synthesis with streams. In *Proceedings of International Conference on Fifth Generation Computer Systems*, pages 666–673, 1992.
- [307] P. Taylor. The fixed point property in synthetic domain theory. In *6th Symp. on Logic in Computer Science*, pages 152–160. IEEE Computer Society Press, 1991.
- [308] L.H. Tharp. A quasi-intuitionistic set theory. *Journal of Symbolic Logic*, 36:456–460, 1971.
- [309] R.R. Thompkins. On Kleene’s recursive realizability as an interpretation for intuitionistic elementary number theory. *Notre Dame Journal of Formal Logic*, 9:289–293, 1968.
- [310] A.S. Troelstra. Computability of terms and notions of realizability for intuitionistic analysis. Technical Report 71–02, Department of Mathematics, University of Amsterdam, 1971.
- [311] A.S. Troelstra. Notions of realizability for intuitionistic arithmetic and intuitionistic arithmetic in all finite types. In J.E. Fenstad, editor, *The Second Scandinavian Logic Symposium*, pages 369–405. North-Holland, 1971.

- [312] A.S. Troelstra, editor. *Metamathematical Investigation of Intuitionistic Arithmetic and Analysis*. Springer, 1973. With contributions by A.S. Troelstra, C.A. Smoryński, J.I. Zucker and W.A. Howard.
- [313] A.S. Troelstra. Notes on intuitionistic second order arithmetic. In A.R.D. Mathias and H. Rogers, editors, *Cambridge Summer School in Mathematical Logic*, pages 171–205. Springer, 1973.
- [314] A.S. Troelstra. Axioms for intuitionistic mathematics incompatible with classical logic. In R.E. Butts and J. Hintikka, editors, *LMPS 5*, volume 1, pages 59–84. D. Reidel, Dordrecht and Boston, 1977.
- [315] A.S. Troelstra. A note on non-extensional operations in connection with continuity and recursiveness. *Indagationes Mathematicae*, 39:455–462, 1977.
- [316] A.S. Troelstra. Some models for intuitionistic finite type arithmetic with fan functional. *Journal of Symbolic Logic*, 42:194–202, 1977.
- [317] A.S. Troelstra. Extended bar induction of type zero. In K.J. Barwise, H.J. Keisler, and K. Kunen, editors, *The Kleene Symposium*, pages 277–316. North-Holland, 1980.
- [318] A.S. Troelstra. Comparing the theory of representations and constructive mathematics. In E. Börger, G. Jäger, H. Kleine Büning, and M.M. Richter, editors, *Computer Science Logic. 5th workshop, CSL '91*, pages 382–395. Springer, 1992.
- [319] A.S. Troelstra. Realizability. In S.R. Buss, editor, *Handbook of Proof Theory*, pages 407–473. North-Holland, 1998.
- [320] A.S. Troelstra and D. van Dalen. *Constructivism in Mathematics*. North-Holland, 1988. 2 volumes.
- [321] G. S. Tsejtin. The disjunctive rank of the formulas of constructive arithmetic (Russian). *Zapiski*, 8:260–271, 1968. Translation *Seminars in Mathematics. V.A. Steklov Mathematical Institute Leningrad 8(1970)*, pp. 126–132. This volume appeared as: A.O. Slisenko (ed.), *Studies in Constructive Mathematics and Mathematical Logic. Part II*. Consultants Bureau, New York, London.
- [322] D. van Dalen and A.S. Troelstra. *Constructivism in Mathematics*. North Holland Publishing Company, 1988.
- [323] J. van Oosten. Lifschitz' realizability. *Journal of Symbolic Logic*, 55:805–821, 1990.
- [324] J. van Oosten. *Exercises in Realizability*. PhD thesis, Universiteit van Amsterdam, 1991.
- [325] J. van Oosten. Extension of Lifschitz' realizability to higher order arithmetic, and a solution to a problem of F. Richman. *Journal of Symbolic Logic*, 56:964–973, 1991.
- [326] J. van Oosten. A semantical proof of De Jongh's theorem. *Archive for Mathematical Logic*, pages 105–114, 1991.
- [327] J. van Oosten. Axiomatizing higher-order Kleene realizability. *Annals of Pure and Applied Logic*, 70:87–111, 1994.
- [328] J. van Oosten. Two remarks on the Lifschitz realizability topos. *Journal of Symbolic Logic*, 61:70–79, 1996.
- [329] J. van Oosten. A combinatory algebra for sequential functionals of finite type. Technical Report 996, University of Utrecht, 1997.
- [330] J. van Oosten. Extensional realizability. *Annals of Pure and Applied Logic*, 84:317–349, 1997.
- [331] J. van Oosten. The modified realizability topos. *Journal of Pure and Applied Algebra*, 116:273–289, 1997.

- [332] J. van Oosten. A combinatory algebra for sequential functionals of finite type. In S.B. Cooper and J.K. Truss, editors, *Models and Computability*, pages 389–406. Cambridge University Press, 1999.
- [333] J. van Oosten and A.K. Simpson. Axioms and (counter)examples in synthetic domain theory. Technical Report 1080, Department of Mathematics, Utrecht University, 1998.
- [334] F.L. Varpahovskij. A class of realizable propositional formulas. *Zapiski*, 1:8–23, 1971. Translation *Journal of Soviet Mathematics* 1,1–11 (1973).
- [335] R.E. Vesley. A palatable substitute for Kripke’s schema. In A. Kino, J.R. Myhill, and R.E. Vesley, editors, *Intuitionism and Proof Theory*, pages 197–207. North-Holland, 1970.
- [336] R.E. Vesley. Realizing Brouwer’s sequences. *Annals of Pure and Applied Logic*, 81:25–74, 1996.
- [337] A. Voronkov. N-realizability: one more constructive semantics. Technical Report 71, Department of Mathematics, Monash University, Australia, 1991.
- [338] A. Voronkov. On completeness of program synthesis systems. In E. Börger, G. Jäger, H. Kleine Büning, and M.M. Richter, editors, *Computer Science Logic. 5th workshop, CSL ’91*, pages 411–418. Springer, 1992.
- [339] K.F. Wehmeier. Fragments of HA based on Σ_1 -induction, 1996. Preprint. Part of the author’s dissertation project at the University of Münster, Westphalia, Germany.