

A DATA BASE ON DATA BASES

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Research in the field of endgame data bases has been initiated by Ströhlein's doctoral work in 1970. The technique was independently rediscovered several times, e.g., by Clarke and Thompson around 1975, the reason being that Ströhlein's thesis did not immediately gain due recognition. Thompson started building data bases for 3- and 4-piece endgames, but, unfortunately, so far did not publish his results except through private communications. Especially towards the end of 1985 he obtained a number of interesting new results reported elsewhere in this issue of the Journal (see pp. 45-49).

In the interest of accessibility, we now publish an extended bibliography, hoping it will prove profitable to the computer-chess research community and to chess lovers alike. We thus redeem our pledge (Vol. 8, No. 4, p. 229). English references preponderate, though German, Russian and Dutch entries are also included. Some classification of entries seemed desirable. Rather arbitrarily, the classes have been taken as:

- Scientific : describing research methods and results, and program analyses.
- Chess-oriented: emphasizing chess results rather than programs.
- Other : reporting not too technically on new results and constructions, and miscellaneous related topics.

The bibliography is selective and does not include all traceable articles on endgame data bases. The popular press has been mostly excluded; so have reviews.

Our additions in square brackets serve to indicate the particular endgame(s) discussed. Exhaustiveness is not claimed and, indeed, we welcome readers' contributions towards extending it. Kenneth Thompson, so far hesitant to publish, is our prime invitee!

SCIENTIFIC PUBLICATIONS

Adelson-Velskii, G.M., Arlazarov, V.L., Bitman, A.R. and Donskoi, M.V. (1983). Mashina Igraet v Shakhmaty. Akademiya Nauk SSSR. [KQP(g7)KQ, KBNK]

Arlazarov, V.L. and Futer, A.L. (1979). Computer Analysis of a Rook Endgame. Machine Intelligence 9 (eds. J.E. Hayes, D. Michie and L.J. Mikulich), pp. 361-371. Ellis Horwood Limited, Chichester, England. [KRPKR]

Bakker, R.C.J. (1984). AI-expertprogramma en database techniek toegepast op het KBBK-eindspel. Afstudeerverslag Informatica-opleiding HTS, Den Haag.

Bakker, R.C.J. and Herik, H.J. van den (1984). Intelligent of Optimaal Mat met Twee Lopers. Computerschaak, Jrg. 4, No. 4, pp. 134-140. [KBBK]

Bergen, A.R.D. van (1985). An Ulti-Mate Look at the KPK Data Base. ICCA Journal, Vol. 8, No. 4, pp. 216-228.

Bramer, M.A. (1978). Computer-generated Databases for the Endgame in Chess. Technical Report. Milton Keynes, Open University.

Citrenbaum, R.L. (1970). Efficient Representations of Optimal Solutions for a Class of Games. Thesis. Technical Report SRC-69-5. Cleveland: Case Western Reserve University.

Clarke, M.R.B. (1977). A Quantitative Study of King and Pawn against King. Advances in Computer Chess 1 (ed. M.R.B. Clarke), pp. 108-118. Edinburgh University Press, Edinburgh.

Dekker, S.T. and Herik, H.J. van den (1982). Mat met loper en paard. Computerschaak, Jrg. 2, No. 4, pp. 129-138. [KBNK]

Dekker, S.T. and Herik, H.J. van den (1982). Toch mat in 33. Computerschaak, Jrg. 2, No. 5, pp. 167-168. [KBNK]

Dekker, S.T. and Herik, H.J. van den (1984). De constructie van een database voor het matzetten met loper en paard. HCC Nieuwsbrief (3 instalments) 56, pp. 45-49; 57, pp. 57-61; 59, pp. 77-78. [KBNK]

Gams, M. (1978). Constructing Complete Game Strategies. Undergraduate Thesis. University of Ljubljana, Faculty of Electrical Engineering (in Slovenian). [KRKN]

Herik, H.J. van den and Herschberg, I.S. (1985). The Construction of an Omniscent Endgame Data Base. ICCA Journal, Vol. 8, No. 2, pp. 66-87. [KBNK]

Herik, H.J. van den and Herschberg, I.S. (1985). Elementary Theory Improved, A Conjecture Refuted. ICCA Journal, Vol. 8, No. 3, pp. 141-149. [KBBK]

Herschberg, I.S. and Herik, H.J. van den (1985). A Gauge of Endgames. ICCA Journal, Vol. 8, No. 4, pp. 225-229.

Komissarchik, E. and Futer, A. (1974). Ob Analize Ferzevogo Endshpilia pri Pomoshchi EVM. Problemy Kybernet, 29, pp. 211-220. [KQP(g7)KQ]

Messerschmidt, H.J. (1980). Parallel Programming for a Chess Endgame Database. Software - Practice and Experience, Vol. 10, pp. 475-487.

Nefkens, H.J.J. (1985). Constructing Data Bases to Fit a Microcomputer. ICCA Journal, Vol. 8, No. 4, pp. 219-224. [KQK, KRK]

Roycroft, A.J. (1986). The Research Opportunities Offered by <Oracle> Data Bases for 5-man Endgames. Proceedings L'Intelligenza Artificiale Ed Il Gioco Degli Scacchi, III^o Convegno Internazionale (eds. B. Pernici and M. Somalvico), pp. 49-58. [KBBKN, KRBKR, KRNKR, KRRKR, KQQKQ, KRPKR]

Storm, T. van der (1984). Eindspel-databases in het algemeen en KPK in het bijzonder. Computerschaak, Jrg. 4, No. 5, pp. 171-174.

Ströhlein, T. (1970). Untersuchungen über kombinatorische Spiele. Dissertation, Fakultät für Allgemeine Wissenschaften der Technischen Hochschule München. [KRK, KQK, KRKB, KRKN, KQKR]

Vriend, G. (1984). Een database voor het eindspel Koning en Pion tegen Koning. Computerschaak, Jrg. 4, No. 4, pp. 140-144. [KPK]

Zellner, H. (1985). Das perfekte Endspiel - auf einem Mikro! Computer-Schach & Spiele, Vol. 2, No. 5, pp. 27-28. [KRK]

CHESS-ORIENTED PUBLICATIONS

Dekker, S.T. and Herik, H.J. van den (1984). *C* GBR Class 0011: a 33-move endgame. EG, Vol. V, No. 78, pp. 345-347. [KBNK]

Fenner, C.J. (1979). Computer Chess, News about the North American Computer Chess Championship. The British Chess Magazine, Vol. 99, No. 5, pp. 193-200. [KQKR]

Friedel, F. (1985). Das perfekte Endspiel (1). Computer-Schach & Spiele, Vol. 2, No. 3, pp. 18-23. [KQKR]

Friedel, F. (1985). Das perfekte Endspiel (2). Computer-Schach & Spiele, Vol. 2, No. 4, pp. 22-25. [KBBKN]

Friedel, F. (1985). Grossartiges Gefühl. Computer-Schach & Spiele, Vol. 2, No. 5, pp. 28-29. [KRK]

Friedel, F. (1985). Fehler bei Capablanca. Computer-Schach & Spiele, Vol. 2, No. 5, p. 29. [KRK]

Friedel, F. (1986). Neue Endspiele auf dem Mikro. Computer-Schach & Spiele, Vol. 3, No. 1, pp. 32-33. [KQK, KPK]

Herik, H.J. van den (1982). Computers en de eindspelliteratuur. Schakend Nederland, Jrg. 89, No. 10+11, p. 323. [KRKN, KBNK]

Herik, H.J. van den (1982). Brute Force bracht de oplossing. De Telegraaf, chess column, 18 September. [KBNK]

Herik, H.J. van den (1983). Een Matvoering in 33 zetten. Schakend Nederland, Jrg. 90, No. 3, p. 100. [KBNK]

Herik, H.J. van den (1983). Optimaal Spel in KPK. Schakend Nederland, Jrg. 90, No. 6, p. 208.

Herik, H.J. van den (1984). Mat in 19 zetten. De Telegraaf, chess column, 23 June. [KBBK]

Herik, H.J. van den (1984). De eindspeltheorie omver. Schakend Nederland, Jrg. 91, No. 2, p. 62. [KBBKN]

Herik, H.J. van den (1984). Databases in Nederland. Schakend Nederland, Jrg. 91, No. 10, p. 331. [KBBK, KRK]

Herik, H.J. van den (1985). 50 zetten of 100 zetten? Schakend Nederland, Jrg. 92, No. 3, pp. 101-112. [KBBKN]

Herik, H.J. van den (1986). Regels en Reglementen. Schakend Nederland, Jrg. 93, No. 4. [KRBRK]

Hewlett, C.W. (1977). Chess Catalog for the Endgame White Queen and White King vs. Black King. 920 Northgate Avenue, Waynesboro, Virginia 22980, U.S.A. [KQK]

Niblett, T. and Roycroft, A.J. (1979). *C* How the GBR Class 0103 Data Base Was Created. EG, Vol. IV, No. 56, pp. 145-146. [KRKN]

Roycroft, A.J. (1979). *C* The GBR Class 0103. EG, Vol. IV, No. 55, pp. 113-116. [KRKN]

Roycroft, A.J. (1979). *C* Q + SP (on 7th rank) against Q. EG, Vol. IV, No. 58, pp. 234-241. [KQP(g7)KQ]

Roycroft, A.J. (1980). Review *C* 0100 and 0130 (GBR classes), GBR class 1300. EG, Vol. IV, No. 60, pp. 292-294. [KRK, KRKB, KQKR]

Roycroft, A.J. (1982). *C* GBR class 0100, *C* GBR class 0400.10 (R+P vs R), *C* GBR class 0103, *C* GBR class 1400.01, with bPd2. EG, Vol. V, No. 69, pp. 64-68. [KRK, KRPKR, KRKN, KQKQ, KQKRP(d2)]

Roycroft, A.J. (1983). Chess Games, July 30, 1983 *C*, A Prophecy Fulfilled. EG, Vol. V, No. 74, pp. 217-220. [KBBKN]

Roycroft, A.J. (1984). Two Bishops Against Knight. EG, Vol. V, No. 75, pp. 249-253. [KBBKN]

Roycroft, A.J. (1985). *C* GBR class 0410, *C* The GBR class 0401 is a 33-move game. EG, Vol. V, No. 80, pp. 428-430. [KRBRK, KRNRK]

OTHER PUBLICATIONS

Bakker, R.C.J., Herik, H.J. van den and Müller, H.G. (1985). Het twee-lopermat. Kritiek van H.G. Müller. Kritiek, Repliek en Dupliek. Computerschaak, Jrg. 5, No. 1, pp. 12-15. [KBBK]

Beal, D.F. (1977). Discriminating Wins from Draws in KPK. Report, Dept. Computer Science, Queen Mary College, London University (reprinted in Advances in Computer Chess 2 as Appendix 5, pp. 22-30).

Beal, D.F. & Clarke, M.R.B. (1980). The Construction of Economical and Correct Algorithms for King and Pawn against King. Advances in Computer Chess 2 (ed. M.R.B. Clarke), pp. 1-30. Edinburgh University Press, Edinburgh.

Bergen, A.R.D. van and Storm, T. van der (1986). The KPK Endgame: A Unit Correction. ICCA Journal, Vol. 9, No. 1, pp. 35-36.

Berliner, H.J. and Campbell, M. (1983). Using Chunking to Solve Chess Pawn Endgames. Proceedings L'Intelligenza Artificiale Ed Il Giocco Degli Scacchi, II^o Convegno Internazionale. (eds. B. Pernici and M. Somalvico), pp. 45-73. [KPPP PPP]

Berliner, H.J. and Campbell, M. (1984). Using Chunking to Play Chess Pawn Endgames. Artificial Intelligence 23, pp. 97-120. [KPPP PPP]

Berliner, H.J. (1986). Computer Chess at Carnegie-Mellon University. Advances in Computer Chess 4 (ed. D.F. Beal), pp. 166-180. Pergamon Press, Oxford.

Bramer, M.A. (1977). King and Pawn against King: Using Effective Distance. Technical Report. Faculty of Mathematics, Open University, Milton Keynes. [KPK]

Bramer, M.A. (1977). King and Pawn against King: Some Quantitative Data. Technical Report, Open University, Milton Keynes. [KPK]

Bramer, M.A. (1978). A Note on King and Pawn against King. Technical Report, Faculty of Mathematics, Open University, Milton Keynes. [KPK]

Bramer, M.A. (1980). An Optimal Algorithm for King and Pawn against King Using Pattern Knowledge. Advances in Computer Chess 2 (ed. M.R.B. Clarke), pp. 82-96. Edinburgh University Press, Edinburgh. [KPK]

Bramer, M.A. (1980). Correct and Optimal Strategies in Game Playing Programs. The Computer Journal, Vol. 23, No. 4, pp. 347-352. [KRK]

Bramer, M.A. (1982). Refinement of Correct Strategies for the Endgame in Chess. SIGART Newsletter, No. 80, pp. 155-163. [KRK]

Bratko, I. (1978). Proving Correctness of Strategies in the AL1 Assertion Language. Information Processing Letters 5, pp. 223-230.

Bratko, I. and Michie, D. (1980). A Representation for Pattern-Knowledge in Chess Endgames. Advances in Computer Chess 2 (ed. M.R.B. Clarke), pp. 31-56. Edinburgh University Press, Edinburgh.

Herik, H.J. van den (1983). Computerschaak, Schaakwereld en Kunstmatige Intelligentie. Ph.D. Thesis, Delft University of Technology, Academic Service, 's-Gravenhage. [KBNK]

Herik, H.J. van den and Herschberg, I.S. (1986). Omnipotence, the rulegiver? Proceedings L'Intelligenza Artificiale Ed Il Giocco Degli Scacchi, III^o

Convegno Internazionale (eds. B. Pernici and M. Somalvico), pp. 1-17. [KBNK]

Herschberg, I.S. and Herik, H.J. van den (1985). Calling All Mates. Editorial, ICCA Journal, Vol. 8, No. 2, pp. 45-46.

Kopec, D. and Niblett, T. (1980). How Hard is the Play of the King & Rook v. King & Knight ending? Advances in Computer Chess 2 (ed. M.R.B. Clarke), pp. 57-81. Edinburgh University Press, Edinburgh. [KRKN]

Korst, J. (1984). Het Genereren van Regels voor Schaak Eindspelen ofwel: Eindspelen, moeilijker dan je denkt! M.Sc. Thesis, Delft University of Technology, Dept. of Mathematics and Informatics. [KBNK]

Messerschmidt, H.J. (1982). Machine Learning and Chess. SIGART Newsletter, No. 80, pp. 131-135. [KRK]

Michalski, R.S. and Negri, P.G. (1977). An Experiment on Inductive Learning in Chess Endgames. Machine Intelligence 8 (eds. E.W. Elcock and D. Michie). Ellis Horwood Limited, Chichester, England. [KPK]

Michie, D. (1986). Towards a Knowledge Accelerator. Advances in Computer Chess 4 (ed. D.F. Beal), pp. 1-7. Pergamon Press, Oxford.

Negri, P. (1977). Inductive Learning in a Hierarchical Model for Representing Knowledge in Chess Endgames. Machine Intelligence 8 (eds. E.W. Elcock and D. Michie), pp. 193-104. Edinburgh University Press, Edinburgh.

Newborn, M.M. (1979). Recent Progress in Computer Chess. Advances in Computer Chess, Vol. 18, pp. 59-117. [KPKP, KPPK, KRKN, KRKB]

Niblett, T. (1981). A Provably Correct Strategy for King and Pawn versus King. Machine Intelligence 10 (eds. D. Michie and Y.H. Pao). Ellis Horwood Limited, Chichester, England. [KPK]

Quinlan, J.R. (1979). Discovering Rules by Induction from Large Collections of Examples. Expert Systems in the Micro-electronic Age. (ed. D. Michie), pp. 168-201. Edinburgh University Press, Edinburgh. [KRKN]

Roycroft, A.J. (1984). A Proposed Revision of the '50-move-Rule'. ICCA Journal, Vol. 7, No. 3, pp. 164-170. [KBBKN]

Roycroft, A.J. (1985). Chess-Endgame Data-Base 'Oracles': Necessary and Desirable Features. ICCA Journal, Vol. 8, No. 2, pp. 100-104.

Seidel, R. (1986). Deriving Correct Pattern Descriptions and Rules for the KRK Endgame by Deductive Methods. Advances in Computer Chess 4 (ed. D.F. Beal), pp. 19-36. Pergamon Press, Oxford.

Seidel, R. (1986). What Constitutes Optimal Play? ICCA Journal, Vol. 9, No. 1, pp. 37-44.

Shapiro, A. and Niblett, T. (1982). Automatic Induction of Classification Rules for a Chess Endgame. Advances in Computer Chess 3 (ed. M.R.B. Clarke), pp. 73-92. Pergamon Press, Oxford. [KPK]