Book Review

Review of (Müller and Konoval, 2016) Understanding Rook Endgames gambit

Abstract. This is a review of Understanding Rook Endgames by Karsen Müller and Yakov Yonoval. It is in the fine tradition of chess endgame books from Gambit Publications and fully exemplifies the high standards set by that house. It will surely be the reference text on this aspect of the game for years to come and is highly recommended from all points of view.

Keywords: Chess, endgame, endgame table, Konoval, KRPPKRP, Müller, rook endgame

Understanding Rook Endgames (Müller and Konoval, 2016) or URE is the latest contribution of many to endgame lore by Gambit Publications, and is the first such work totally checked by 7-man and sub-7-man ‘EGT’ endgame table verification. It is available not only in paperback but on Apple/Android devices courtesy of the Gambit Chess Studio app, a particularly useful tool here for the mobile reader following the analysis.

The authors scarcely need any introduction. Karsten Müller is the major and most generous purveyor of endgame wisdom via magazines, training DVDs and books (2001, 2008, 2016). Yakov Konoval was the first computer scientist to create a program efficient enough to generate 7-man EGTs in reasonable time. His fruitful partnership with Marc Bourzutschky not only addressed all 7-man endgames but set new standards in the independence of EGT-verification. New depth records were repeatedly set, in this case to the Depth to Conversion metric \( DTC \). New chessic knowledge and insights were also created and many games and studies were highlighted where optimal moves had previously been missed. Having said that, the existence of definitive EGTs benchmarks also highlights the excellence of endgame play at the top level. The 7-man findings of Bourzutschky and Konoval (2006-13) appeared often in the magazine \( EG \) and were reviewed in the \( ICGA Journal \) (Haworth, 2005-13). A page on the authors themselves would have been an interesting addition.

Some 10% of games arrive at a rook endgame, and the main focus of this new book is on KRPPKRP to which 160 pages are devoted. The preparatory material necessarily includes KRPKR (14pp), KRPPKR (23pp), KRKP (4pp) and KRPKRP (11pp), and refers to the earlier rook-endgame work of Müller (2001, 2008) and Nunn (1992, 2009, 2010). The last endgames highlighted are KQRPKQR and KRRPKRR (7pp). Each chapter is laced with history, corrections to past analysis, new discoveries and exercises for the reader. Closing out, there are chapters on principles of play, theoretical endgames, historic games and solutions to the exercises. There are comprehensive indexes on players, composers and analysts: all world champions across 130 years from Steinitz to Carlsen have contributed examples of play.

Examples of longest wins are listed as usual and will fascinate those interested in the most profound, subtle and inscrutable play, especially as the initial positions are unlikely to occur on the board. See Tables 1 and 3 here, and Haworth (2017) for extended statistics and lines of play. The practical player will be more assisted by the three tables of statistics, showing the distribution and win/draw profile of actual games across the various parts into which the endgames are divided. KRPKR for example is simply studied in terms of the four files for the pawn: a/h, b/g etc. The b/g files feature the most games (18,830 of 60,802) and the highest likelihood of winning (48%).
Table 1

<table>
<thead>
<tr>
<th>1-0 maxDTx in winner's moves</th>
<th>0-1 maxDTx in winner's moves</th>
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1DTM = Depth to Mate. DTZ = Depth to Zeroing of the move-count. The DTZ50 metric considers the 50-move-draw rule and indicates possibly-modified depths: frustrated wins, fw, are ‘draws’. DTZ50 also gives depths to frustrated wins. DTZ50 \_ and therefore DTZ50 have been calculated for all 6-man endgames whereas DTZ has not.

Table 2

The structure of URE’s KRPKKRP analysis

| # | § | Class | Configs. | pages | Total | # % | # % | Subsections (P-file config., ...)
|---|---|---|---|---|---|---|---|---
| 01 | 4.3 | No passed pawns, and pawns connected | 7 | 28 | 67-95 | 24072 | 19,144 | 55 | 10,863 | 45 | 7 | hg-g/h, fg-g/f, cf-c/e, de-d |
| 02 | 4.4 | No passed pawns, and pawns isolated | 3 | 4 | 95-99 | 4,487 | 2,753 | 61 | 1,734 | 39 | 1 | fg-g/f, etc |
| 03 | 4.5 | The attacker has a connected passed pawn | 6 | 9 | 99-122 | 12,358 | 9,778 | 64 | 8,880 | 56 | 6 | hg-f, gf-g/f, fs-d/g, ed-f |
| 04 | 4.6 | The attacker has a nearby, isolated passed pawn'apP' | 25 | 20 | 128-235 | 23,510 | 13,962 | 55 | 11,548 | 45 | 6 | fh-h, gh-g/h, eh-g/h, apP on c-f |
| 05 | 4.7 | One outside passed pawn | 26 | 27 | 148-175 | 30,977 | 17,017 | 46 | 19,660 | 54 | 15 | ab/cg-g/h, bg-f/g/h, af-f/g, etc |
| 06 | 4.8 | All passed pawns, connected and close together | 9 | 5 | 77-130 | 12,116 | 3,716 | 31 | 8,400 | 69 | 4 | Assorted R/KP properties |
| 07 | 4.9 | All passed pawns, connected and far apart | 6 | 6 | 130-145 | 15,788 | 4,781 | 30 | 11,007 | 70 | 5 | ab-f/g/h, bc-g/h |
| 08 | 4.10 | Attacker's passed pawns passed, isolated and close together | 16 | 19 | 203-204 | 13,383 | 7,298 | 54 | 6,095 | 46 | 3 | ac/bd-p/P, (e.g.) eh-b |
| 09 | 4.11 | Attacker's passed pawns passed, isolated and far apart | 17 | 19 | 207-212 | 13,902 | 7,326 | 53 | 6,576 | 47 | 1 | Many cases and motifs |
| 10 | 4.12 | Doubled pawns versus pawn | 32 | 5 | 204-208 | 5,765 | 3,869 | 67 | 1,896 | 33 | 1 | Again, a variety of themes |
| Totals | | | | | 144 | 142 | 163,993 | 79,334 | 48 | 84,659 | 52 | 49 |

KRPKKRP is divided according to whether there are passed pawns or not. Winning chances are 31% on average with maxDTC (per P-file arrangement) varying from 25 moves for KRP(a)KRP(b) to 41 for KRP(a)KRP(c).

Devising a taxonomy for KRPKKRP is the data-mining grand challenge solved by this book. There are 144 configurations of the pawns and these are discussed under ten themes mainly on the relative positions of the pawns’ files, see Table 2 which is based on the book’s p66. Sub-configurations are again usual in terms of specific files for the pawns – ab-a (the most common, 46% wins), bc-a (63% wins), gh-a (69% wins) etc. Even where pawn-files are not used, readers should easily be able to find the relevant part of the KRPKKRP chapter.

The remainder of this review aims to capture the range and depth of research, and the flavour of the book’s text, using just six Table 3 positions (#02 and #22–26) as illustrated in Fig. 1.

No book on rook endgames is complete without the misnamed KRPKR ‘Lucena’ position which is traced back (Nunn, 1992, #179; Winter, 2014) to Salvio (1634) rather than de Lucena (1497). This shows a common winning technique: the pawn when off the edge allows the king and rook to line up together behind it to exploit the opposing rook’s lack of diagonal mobility. “1. Re4 The rook moves up the board to provide a shield for the king. 1. . . . Rh1 2. Kf7 Rf1+ 3. Kg6 Rg1+ 4. Kf6 Rf1+ (4. . . . Kd6 5. Re6+ Kd7 6. Re5 Rg2 7. Rg5 ++) 5. Kg5 Rg1+ 6. Rg4 ++. This technique is often

2 Exercise for the reader? Black pawn on files a-d; White pawns on aa/ab/.../hh; 4 * C(2+7, 2) = 4 * (9*8/2) = 144.
Table 3
Some highlighted rook endgame positions, with references to URE

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Fig. 1. Table 3 positions: #02 ‘Lucena’, #22 Komodo-Stockfish, #23 Lauronen-Kivipelto, #24 Levenfish and Smyslov, #25 Botvinnik-Fischer and #26 Euwe-Grünfeld.
referred to as ‘building a bridge’, with White’s king and rook forming the pillar in the middle. The Lucena win can also be used with a bishop’s or central pawn.”

**Komodo-Stockfish** shows that even a top class chess engine can be confounded by a zugzwang. “71. Rh3? (71. Kd5! Rc3 72. Ke4 Rc5 and now White is to move in the mutual zugzwang. 73. Rd3 Kxh7 74. Rd4 Kg7 75 Rxh4 [KRKP] Kf6 76. Kd4 Rg5 77. Kc4 Ke6 78. Rb5 Rg1 79. Kc5 Kd7 80. Rb7+ Ke8 81. Rb6 and the game was later drawn.” There are other examples in the ‘computer games’ §4.14 of engines struggling with fortresses and positional draws.

Lauronen-Kivipelto includes the DTC-deepest KRPPKR position which has occurred over the board: $dtc = 61$ compared with the maxDTC of 79 moves.\(^3\) “34. a4? The win starts with 34. Ke2! Rh4 35. a3! Kg7 36. Rb! Ra4 37. Ra2! 34... Rh1+? (34.... Rh5 =) 35. Ke2 Ra1 36. Rb4 Ra3 37. f4? (37. Rf4) 37... Kg7 38. Kd2 Kg6 39. Kc2 Kf5 40. Kb2 Rh3 41. a5 Kg4 42. a6 Rh6 43. Ra4 Rh8 44. Ke3 f5 45. a7 Ra8 46. Kd3 Kf3 47. Kd2 Rd8+ 48. Ke1 Re8+ 49. Kf1 Ra8 50. Kg1 Rg8+ 51. Kf1 Ra8 52. Ke1 Re8+ 53. Kd2 Rd8+ 54. Kc3 Ra8 55. Kd3 Kg4? (55.... Kg3 =) 56. Ke3 Re8+ 57. Kf2 Ra8 5s8. Kg2 Kh4 59. Kf3 Kh5 60. Ra6 1-0.”


From the Historic Games chapter, the only Botvinnik-Fischer confrontation. “One of the most famous adjourned games. Fischer had sealed 45.... Rc5. 46. Rf7 Ra5 47. Rxh7. The Soviet team had analysed all night long and established that Geller’s fantastic idea was sufficient for a draw. This concept of fighting against Black’s queenside pawns had escaped Fischer’s attention. 47. ... Rxa4 48. h4+ Kf5 49. Rf7+ Ke5 50. Rg7 Ra1 51. Kf3 b5?? After 51... Kd4 52. Rxe6 b5 53. h5 b4 54. h6 b3 55. Rg4+ Kc5 56. Rg5+ Kc6 57. Rg6+ Kb7 58. Rg7+ Ka6 59. Rg6+ Ka5 60. Rg5+ Ka4 61. Rg4+ Ka3 62. Rh4 b2 63. h7 b1 = Q 64. h8 = Q Rb3+ 65. Ke2 Qd1+ 66. Ke3 Kb1 Fischer claimed that Black wins in My 60 Memorable Games. But Botvinnik found that 67. Qf8+ Ka2 68. Qc5 draws and the 13-year-old Garry Kasparov even found a second drawing method in a session of the Botvinnik school: 67. Rc4!=. 52. h6! Ra3+ 53. Kg2 gxh6 54. Rg5+ Kd6 55. Rxh5 [KRKP] f4 56. f4 Kc6 57. Rh8 h3+ 58. Kh2 a5 59. f5 Kc7 60. Rb5 Kd6 61. f6 Ke6 62. Rb6+ Kf7 63. Ra6 Kg6 64. Rc6 a4 65. Ra6 Kf7 66. Rc6 Rd3 67. Ra6 a3 68. Kg1 ‘With a face as white as a sheet, Fischer shook my hand and left the hall with tears in his eyes’ (Botvinnik).”

Euwe-Grünfeld (1921) features three mutual zugzwangs in a variation just off the played line. “This is a well-known theoretical position. 48.... Kg5? Black’s king should not move in front of the pawns. One sample win is 48.... f5 49. a7 Kg7 50. Kg3 g5 51. Kg3 Ra3+ 52. Kg2 g4 53. Kg2 f4 54. Rb8 Rxa7 55. Rb4 Ra2+ 56. Kg1 Ra1+ 57. Kg2 g3+ 58. Kg2 Ra2+ 59. Kg1 Rf2 ++. 49. a7 Kf5 50. Kg3?” This curious error also occurs in Dvoretsky’s Endgame Manual (though corrected in the 4th edition of 2014), Levenfish and Smyslov’s famous rook endings book and several practical games. The correct

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\(^3\) In #8.05, Dyckhoff-Eliskases (1930), KRRKRRP 4R3/3r4/8/8/2K1p2R/5k2/4r3/8b - - 2 64 wins in ($dtc =$) 79 moves.
line is 50. Kg2 Ra2+ 51. Kg3 g5 52. Kf3 Ra3+ 53. Kg2 Kg4 54. Rf8 Ra2+ 55. Kg1 Rx a7 56. Rxf6 Kg3 57. Rf1 = . 50.... Ra3+? After 50.... Ra2! with mutual zugzwang, Black wins, e.g., 51. Kf3 g5 52. Kg3 Ra3+ 53. Kf2 Ra7 =.

51. Rxf6 Ra2+ 52. Kg3 Kg5 53. Kg2 f5 54. Kg3 Ra3+ 55. Kg2 f4 56. Kf2 Kg4 57. Kg1 Kg5. Rg8 Ra2+ 58. Kg1 Rx a7 59. Rg6+ Kg3 60. Rf6 Ra1+ 61. Kh2 Re1 62. Rf8 Re4 63. Kg1 Re1+ 64. Kh2 Rf1 65. Ra8 ½-½.

Players at all levels will benefit from URE’s new approach and insights into rook endgames, particularly KRPPKRP. There are many mansions in the world of chess: the game, the study, the puzzle, the statistics and the historical heritage. Whatever one’s interest, there is much to discover, savour, absorb and enjoy here. The Gambit team’s professional editorial and production standards are well in evidence with an intriguing ‘deus ex machina’ cover, balanced coverage edited by Graham Burgess, typesetting by Petra Nunn and a perceptive foreword from John Nunn with his own choice of highlights. Understanding Rook Endgames is a major and definitive step forward on the topic, sets the bar high and will surely be the reference text for years to come. It entertains as much as it educates and is thoroughly welcome and recommended from all points of view.

My thanks to Yakov Konoval for tabular data which could not be accommodated in URE, to colleagues for supplementary information, and to Eiko Bleicher (2016), Ronald de Man and Niklas Feikas (2016), John Tamplin (2016) and Victor Zakharov (2016) for the service provided by their DTC, DTM and DTZ50’ EGT-query sites.

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G.M.C. Haworth
33, Alexandra Rd., Reading, Berkshire, RG1 5PG, UK
E-mail: g.haworth@reading.ac.uk