## Contents

Explanation of Symbols ..... 6
Acknowledgements ..... 7
The ABCs of Chess ..... 9
Introduction ..... 11
Chapter 1 - Queen Endings ..... 13
Chapter 2 - Rook Endings ..... 33
Chapter 3 - Bishop Endings. ..... 65
Chapter 4 - Knight Endings. ..... 84
Chapter 5 - Bishop versus Knight Endings ..... 107
Chapter 6 - Rook \& Minor Piece Endings ..... 138
Chapter 7 - Two Minor Piece Endings ..... 160
Chapter 8 - Major Piece Endings ..... 172
Chapter 9 - Queen \& Minor Piece Endings ..... 186
Chapter 10 - Three or More Piece Endings ..... 199
Chapter 11 - Unbalanced Material Endings ..... 215
Thematic Positions. ..... 236
Glossary ..... 243
Index of Names ..... 244
Index of Games ..... 246
Index of Exercises ..... 251

## Acknowledgements

Thank you to the New In Chess editorial staff, particularly Peter Boel and René Olthof, who provided a lot of useful suggestions for fine tuning the manuscript.

I would like to extend my appreciation to Alex Baburin for his work in his online newspaper Chess Today. After seeing some fascinating pawn endings appear in CT's ‘Endgame Kaleidoscope' I was inspired to flesh out his excellent analysis and seek out more endgames, which led to the production of this book.

I would also like to thank my students, John Michael Burke and Praveen Balakrishnan, for providing games for the book.

I used the chess engine Fritz 13 (with some help from Rybka 2.3.2a 32-bit) and the online Shredder endgame database. Chess engines have grown tremendously in strength to the point where all works of analysis rely heavily on their input. Fritzy uncovered a host of hidden possibilities missed by players, analysts, and myself. These discoveries made the book a whole lot richer. Readers, however, should be aware of the limitations chess engines have in the endgame. Fritz 13 was adept at finding conclusive continuations - forced Zugzwangs, pawn breakthroughs, and the like. But in positions where the key question is how to make progress, it often faltered, producing winning evaluations without any apparent winning plan. Players should be especially conscious of that when scrutinizing their own games.

Endgame tablebases provide a true assessment for all positions with six or fewer pieces. All such positions in this book thus have that extra quality assurance. Tablebases are most often cited here in queen \& pawn v. queen endings, partly because proper play in such endings is difficult to explain as well as lengthy and beyond the scope of the agenda here. As I have said in the chapters, tablebase wins and draws are very difficult to execute properly for humans. In the pure pawn endings, tablebase analysis is quite enlightening and understandable, though most of these positions have been worked out by humans.

Finally, I would like to dedicate this book to past and potentially future Olympians, my wife Deborah and my children Aidan and Amy.

Joel Benjamin, Waldwick NJ, December 2014

## Chapter 3

## Bishop Endings

Color complex is the most important feature of bishop endings．Almost invariably， the pawns are better off placed on the opposite color of the bishops（opposite co－ lored bishops have their own dynamic）．That factor can often provide opportunities for favorable pawn endings．

## Technical Liquidations

Game 3.1


48．．．宦xb3！
On 48．．．axb3 49．axb3 White will push through his kingside pawns．
49．最xb3
$49 . \mathrm{axb} 3 \mathrm{a} 350$ ．寞b1 c2．
49．．．axb3 50．axb3 क్ d5 d 5


We have a typical positional draw here．

The white king cannot support his pawns without allowing the c3－pawn to queen．

Game 3.2
Gerard Martinez
Eldis Cobo Arteaga
Havana ol 1966


## 34．．．Шّa5！

An unconventional trade．The defen－ der can normally hold a four－on－three bishop ending with the pawns all on the same side．But here the pawns being fixed on the same color as the bishops proves fatal．Thus Black avoids potential counterplay by simplifying．

 The vulnerability of the g3－pawn enabled Black to take a dominant king position，and now breakthrough tactics come into play．
41．© ${ }^{\text {g }} \mathrm{g} 5 \mathrm{f4}$ ！
The first，but not last time we will see this move．


## 42．gxf4

42．罳xf4 罳xf4 43．gxf4 身d2－＋

White meets with Zugzwang after 45．瞙g3
 might continue 46．葸d6（46．崽g5 寛c7＋


45．．．鼻c7
One mustn＇t be too anxious to simplify： 45．．．思xg5？46．hxg5 f4 47．g6 홀d2
 is not a complicated queen ending，be－ cause Black cannot escape checks after 51．贸奖 $\mathrm{d} 5+$ ．

## 46．혈e1

46．崽e7 would resist better，but sim－ ply $46 \ldots \mathrm{f} 4$ is good enough to win，as long as Black is mindful of the bishop and wrong rook pawn combination： 47．exf4 鼻xf4 48．寞c5 宽e5

analysis diagram

49．${ }^{\text {Gig}} 2$ 2（White has to avoid the pawn ending：49．宽b6 宽d4＋50．宽xd4 寄xd4

象g3 escorts the h－pawn home）


寞g5 and $58 \ldots$ ．．．${ }^{\text {d }} \mathrm{d} 2$ will force a queen．
46．．．鼻d6
A cute Zugzwang，though 46．．．寞g3＋ 47．．taf1 f4 would work as well．

## 47． $\begin{gathered}\text { baf } \\ \text { 2 }\end{gathered}$



## 47．．．f4

White resigned．In the end White can－ not hide from the pawn ending，for example：48．暻h6 fxe3＋49．䁂xe3置 $g 3+!$ etc．

Forcing liquidation from a bishop en－ ding may be more difficult than from a queen ending，but offering the trade is an easy and important tool for making progress．

Game 3.3

## Ali Alaca Serkan Soysal

Turkish League 2013


Black has two trumps here：a solid passed pawn and a fixed target on e4 to prey on．

## 66．．．鼻h5 67．鼻f5？鼻d1

White＇s 67th move gets a＇？＇because it allows immediate liquidation：


 （on 69．exf5 e4 Black＇s pawns defend each other so he wins easily）69．．．\＆

 winning the opposing queen．





 bit of time．

## 

Or 84．鼻g 4 崽b3 followed by ．．．蒠d1．
84．．．畠h＋


## 85．㔬g4？！

White enters the pawn ending through ignorance，miscalculation，or desperati－ on．While 85 ．．ta 3 g 4 is just as hopeless， 85．象g3 would force Black to exercise further technique．85．．．कौe2 and now：
 88．息g6 葸f3 89．鬼e8 g4 wins the e4－pawn；
 88．息c8 g4！（88．．．曽e2 89．畕f5 崽h5！ 90．暻h7 宽f3 wins the pawn，but

89．寞b7 89．．．宽d1 90．寞c6 continues resistance）89．募f5．Now the bishop has to stay put to prevent either black piece from taking on e4．Black wins by triangulating：89．．．
 thanks to Zugzwang．

## 高e3 <br> 0－1

## Tempo Games

In bishop endings，an extra pawn with pawns spread over the board will usually be good for a win．The following is a surprising exception．

Game 3.4

## Aleksander Sznapik Waldemar Swic <br> Lodz 1978



With his extra，outside passed pawn， Black looks forward to diverting White＇s king and penetrating on the other side．

## 55．畕c4！

The b－pawn will drop straight off in the pawn ending，but a decisive march to the kingside for Black＇s king seems in－ evitable．

## 55．．．崽xc4 56．${ }^{6} x$ x 4 d5＋

56．．．tad7 would require accurate defense for a bit longer but would not change the





 White has to keep the black king from heading for the h4－pawn）61．．．${ }^{\circ} f 2$
 홍xg5 64．象xd6 h5 $65 . \mathrm{e} 5 \mathrm{~h} 466 . \mathrm{e} 6 \mathrm{~h} 3$
 Black cannot avoid a perpetual） 62.0 d 4
 64．${ }^{\text {g }} \mathrm{d}$ d 5 and Black cannot make pro－ gress because 64．．．島d3？？65．e5！dxe5 66．홐xe5 gives White an extra tempo to clean out Black＇s pawns and win．


## 57．${ }^{\mathbf{d}} \times \mathrm{xb} 4!$

Only in this way can the white king ward off its counterpart．If 57．exd5＋？？


## 57．．．dxe4

57．．．象d6 58．象c3！（58．exd5 象xd5－＋）

 The players agreed to a draw because 58．営c4 draws as in the previous note．

Game 3.5

## Oliver Renet Ulf Andersson

Clermont－Ferrand 1989


White is getting squeezed a bit here， with a few pawns stuck on dark squares． Should White make a break for it in the pawn ending？

## 39．自c3？

You have to be pretty sure to play such a move．A waiting move like 39．宽e3 looks awfully tough to break down．

## 39．．．g5？

One of the premier endgame players of our time miscalculates，probably on the cusp of making the time control．
 （not 41．．．d5 42．exd5 写xd5 43．h4＝） wins easily，as all White tries fail： $42 . \mathrm{h} 4$（42．h3 d5 $43 . \mathrm{exd5}$ 홍xd5 44．h4
雨xd5－＋）42．．．gxh4 43．gxh4 d5
 and Black can win by going after either pawn．

## 40．（1d4！

Renet redeems his previous blunder， and the win has vanished．
40．．．d5

40．．．g4 41．寞xe5 無xe5 42．．
 After 43．．．g4 44．h4 or 43．．．h4 44．g4 White holds the opposition．

Game 3.6

Peter Leko Julio Granda Zuniga

Tromsø 2013


There isn＇t much going on in the posi－ tion，so Leko looks to squeeze some－ thing out of his slightly better king po－ sition in the pawn ending．

## 35．㝠h3 察xh

Black doesn＇t have to trade． He is unlikely to lose after 35．．．鼻b3 36．a5


Julio Granda Zuniga
bxa5 37．bxa5 鼻c4 but his b7－pawn is a target in that case．

## 36．

Granda forces White to use up reserve moves on the queenside to eliminate potential Zugzwangs．

### 37.25

White dreams of snacking on b7 and liberating this pawn． $37 . \operatorname{axb5}$ comes into consideration，to try to free up the
 39．f4 f6＝blocks off White from ever getting there．

## 



## 39．f3

This allows an immediate draw．White can poke around a bit with 39．f4 but accurate play holds the balance：39．．．





 52．鲜xc6 is technically a tablebase draw， but in human terms it would be a se－ rious error to allow！For example，after
 can draw with $54 \ldots$ 朔 $f 8,54 \ldots$ ．．． 4 f5，or 54．．．我e3，but 54．．．慈 g 8 loses in 90！） 45．器c5 㯖c7 46．b5 cxb5 47．．． 흘d7＝

$40 . e x f 5+$ 東f6 is a dead end．

Game 3.7

## Igor Yagupov <br> Vladimir Paleologu

Cappelle－la－Grande 2014


The symmetrical pawn structure does not mean an easy draw for Black．His queenside pawns are potential targets for the bishop，and their weakness al－ lows White＇s king to grab a dominant position in the center．




## 31．．．a5

This may be the wrong rook pawn．Black probably wanted to avoid b4－b5，perma－ nently targetting the b6－pawn and taking away the c6－square，which may be im－ portant in the pawn ending．It would have been desirable to get in $31 \ldots$ ．．．h5．The idea，
which we often see in rook endings，is to shorten the board so that the h－pawn doesn＇t end up vulnerable to attack．It would also take away reserve tempo moves from White．These factors actually decide the game in the end．
 $35 . f 4$ g6
Black was not having any part of putting his bishop on f 6 and inviting the pawn ending．
36．定e5 真e7
Black is understandably hesitant to al－ low the pawn ending after 36．．．宽f2 37．寞d4 寞xd4 38．噚xd4．


After all，here White has a better king po－ sition and more reserve tempo moves：
罗c6 41．b4！axb4 42．噚xb4 噚c7
 tempi with his h－pawn and will win after two Zugzwangs：44．h3！喜a7






 win as in A）with 40. ． ge 4 because on



46．象b5 g5 47．hxg5＋hxg5 48．噚c4！ wins easily．There is another approach


 42． 5 ， 5 ，which can lead to various win－ ning queen endings，for example $42 \ldots$ b5 43．axb5 啚xb5 44．f6 象c5 45．h3 a4


 37．鼻d4


## 37．．．賭d8？？

After 37．．． beautiful but I don＇t see a plan to pe－ netrate．

## 38．g5！

This move shows why one has to be flexible in placing their pawns in a bis－ hop ending．Normally one places pawns on the safe color，but here the pawns help to dominate the opposing bishop．



Zugzwang！Black cannot avoid the pawn ending．40．．．f6 41．h4 f5 42．b3 would induce collapse．





Black resigned．

## King Activity

Game 3.8

## Nigel Short <br> Rafael Vaganian

Hastings 1983


The position looks completely routine， but Vaganian finds a way to test his teen－ age opponent．
32．．．f6！
It＇s not ideal to put this pawn on the same color as the bishops，but Black opens a fast track to the center for the king．

White could adjust his queenside pawns without delay，eliminating any possi－ ble pawn endings： $34 . a 4$ 我e6 $35 . \mathrm{b} 3$
 Without targets to attack I don＇t see what Black can do．
34．．．韩e6


## 35．a4？！

This move is better never than late． White could still avoid the upcoming trade with 35 ．䓢d2 喜d5 36. ． 37．g4．White＇s queenside pawns are not fixed on dark squares，nor are Black＇s kingside pawns ideal either．Beliavsky and Mikhalchishin recommended
高e4 38．a4 in order to create counter－ play on the queenside．It looks like quite a gamble，but at least White could con－ ceivably win in some lines．The easiest route to a draw for White is to avoid all the pawn endings．



Rafael Vaganian


## 38．홀d3

The aforementioned grandmasters sug－ gested 38．b4 as White＇s last chance，but I don＇t think it＇s completely gotten away yet．

## 

It seems more sensible to hold this one back．White can apparently hold by setting up a wall with $40 . \mathrm{f} 4 \mathrm{f} 5$

 47．홀c2．

## 40．．．h5 41．g3 g5



## 42．g4？

This mistake clearly decides the game． $42 . f 4$ still seems to hold，for exam－ ple 42．．．g4 43．h4 f5 44．象d3 影b4 45．．${ }^{3} \mathrm{c} 2$ 2．
42．．．h4 43．f3 홀d5 44．b4
 in Zugzwang and Black still has a pawn move in reserve－a fatal combination．




And White resigned．

## The Race

The pawn ending from the following game is quite well－known，but it is instructive to see how the players got there．

Game 3.9

## Lev Polugaevsky Karen Grigorian

Leningrad ch－URS 1971


## 35．．．b6！？

Black can certainly wait with this move． $35 \ldots$ 畕b5 keeps the white king from
寞e8＋），offering excellent chances for a fortress．White has a plan to advance his b－pawn to b6，but in that case a timely ．．．b7－b6 from Black should suf－ fice．

## 36．c6！？

This is the introduction to a diabo－ lical trap．Instead，White would be hard－pressed to make progress if he had played 36．b4 axb4 37．axb4 bxc5 38．bxc5 宦b5．
36．．．畕b5 37．h4


## 37．．．暻xc6？

This is a botched calculation（possibly under time pressure）．When a player of Polugaevsky＇s caliber allows the pawn ending，it might be wise to look a little more carefully．In some variations Black can go into the pawn ending，but gene－ rally he does not need to．
A）Here $37 \ldots \mathrm{a} 4$ is interesting but also incorrect：38．b4（38．bxa4？罳xa4 39．真g4 g6＝）38．．．홐d6 39．真g4 g6
 g5 White is stymied on the kingside） 40．．．象e7（ $40 \ldots$ 寞xc6 loses as in the



 wins a pawn cleanly；
B） $37 \ldots$ ．．．${ }^{\text {Baby }} \mathrm{d} 6$ ！however，seems to hold．The pawn ending after 38．a4

 41．．t．ff h5 42．g4！wins for White：42．．． g6＋（42．．．hxg4 43．．．


However，Black need not take the pawn； after $38 \ldots$ ．．．寞a6 White has the same pro－ blems penetrating，but with his queen－ side fixed on the wrong color now：
 easy draw．On 38．我g4 g6 39．tógf3，the
pawn is no longer taboo：39．．．畕xc6！
 gxh5＋43．噚f5 啚d4 44．a4 h4 45．gxh4 h5 leaves White in fatal Zugzwang．
鄓d4 41．h5 b5 42．b4 a4
After 42．．．axb4 43．axb4 舜c4 44．
 trade after both sides promote．


 But not 47．e5？？猡b1 and Black is the new favorite！

## Sacrifices and Countersacrifices

Nikita Maiorov Kadir Guseinov
Litohoro jr 1999


Black has a critical choice to make at the outset．

43．．．a4！？
Black banks on having enough time to bring the king back before White manages to eliminate his kingside pawns．While this seems sufficient for victory，I would have felt more comfor－ table trying to queen the a－pawn out－ right．In this type of situation a rook pawn is particularly useful because the defender cannot count on sacrifi－ cing the bishop for it．43．．．寞c4 44．e4


 （46．畕xf7 寞c4 47．寞xc4 鬼xc4 48．e5啚d5－＋）46．．．象c3（46．．．鼻c4 also wins easily，for example： 47. ．fdy（47．畕xc4
 홍e3 and Black cleans up the kingside） 47．．．葸xd5 48．exd5 a3 and Black will queen with check） 47. 置xf7 a3 $^{2} 8 . e 5$葸c4 49．宽xc4 象xc4 50．e6 a2 51．e7
 that would have ruined the game for our purposes．
 47．h4 数c6 48．g4 hxg4 49．fxg4 혈d7




55．．．f5
This wins easily，of course．When I showed this in one of my classes，one of my young students，Alexis Hedvat，suggested the move


Evgeny Tomashevsky

55．．．f6，for which I am grateful because it led me to discover great hidden nuances



 led to the further discovery that 55．．．
 Zugzwang．
56．gxf5 ⿷匚⿳丨コ丨冖夕丶f6！
0－1

## Bishops of opposite colors

Liquidation happens far less frequently with opposite colored bishops because they aren＇t traded in the conventional way．So temporary sacrifices become a particularly useful tool for a successful liquidation．

Game 3.11
Evgeny Tomashevsky Alejandro Franco Alonso
Eilat tt 2012

 $69 . f 6$
Some subtlety is required：69．．⿷⿱十口日心㇒十 d ？


 77．吿xd5 啚d7＝

With three passed pawns White has a surplus to use to deflect Black＇s king．

 77．韩b6＋ー．
 75．f7 䍙xd5＋76． Black resigned．
The white king scoops up the b－pawn and escorts home the a－pawn．

## Exercises（Hints on page 83）

Exercise 3.1


How does White win？

Exercise 3.3


Evaluate 1．．．畕f4．

## Exercise 3.5



Should White play $35 . \mathrm{d} 5$ or should he prepare it with 35．a3？

Exercise 3.2

Exercise 3.4


Evaluate the pawn endings after 43．．．．ٔ．马大马e6 44．思e4 and 43．．．器c744．崽e4．

Exercise 3.6


Should White test the pawn ending with 39．宽xf7 ？

## Exercise 3.7



If White takes the f4-pawn, should Black trade bishops?

## Hints for Exercises Chapter 3

1. Choose your ending
2. How much to trade?
3. Need for speed
4. Tempo, tempo
5. Zugzwang
6. Queen ending?
7. Can't be everywhere
