Instructive Computer Games of Chess: What we can learn from the beasts?

S. Kiminki

August 10, 2019

Chapter 1

Attacking Chess

1.1 Stoofvlees II a11 – chess22k 1.13

TCEC S16 League 2, Round 23.1
D05 - COLLE SYSTEM: RUBINSTEIN OPENING
August 6, 2019

Chess against a strong opponent can be a brutal endeavour, as black found out in this game the hard way. Black started with some small inaccuracies in the opening, which culminated in a strategic blunder in the middle game. An engine as strong as Stoofvlees would not let such opportunity pass.

Main points:

1. Opening discussion
2. Positional defensive weaknesses
3. Attacking tactics

1	**d4**	**♘f6**
2	**♘f3**	**e6**
3	**e3**	**c5**
4	**♗d3**	**d5**

End of the opening book.

5	**b3**	**c×d4?!**

Black is perhaps releasing the tension a bit too eagerly. Now the dark square bishop does not get an access to the c5 square, as would happen if white could be persuaded to play d×c5. And indeed, the mainline 5... ♘c6 scores significantly better than the move played.[1]

6	**e×d4**	**♘c6!?**

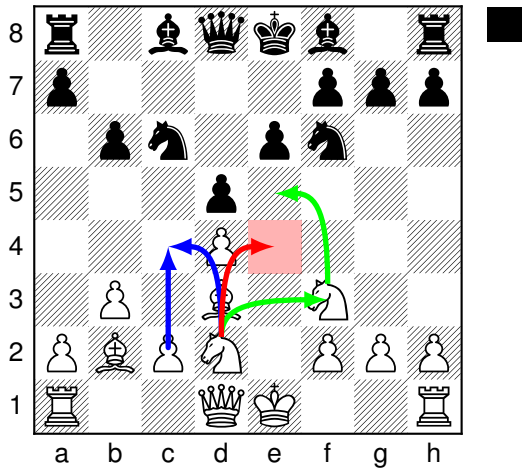
However, now after the exchange, perhaps better was to ask white to make a slightly awkward pawn move with 6...♗b4+ 7 c3. The pawn on c3 would block the bishop's vision, at least temporarily.

7	**♗b2**	**b6?!**

Much more common plays were ♗d6, ♗e7, or ♗b4+. Pawn to b6 superficially helps the light square bishop development allowing ♗g7. But it's not easy to see how black could break the center to liberate the bishop. Perhaps better idea was to play ♗d7, instead, and ♗b5 later given a chance. Further, as black still had the c-pawn anymore, the move would have been sensible to support c5. But this is not the case here.

8	**♘bd2N**	

[1] 5... ♘c6 29%-41%-30%/612 games; 5... c×d4 35%-45%-20%/49 games; Lichess masters database accessed on August 8, 2019.



This is a flexible move:

1. The knight is ready to hop in to f3 after the Nf3 knight moves to, say, e5 (green); and

2. Extra control is added on d4 to discourage black's potential ♘e4, f5 ideas (red); and

3. Support for the potential c4 push is added (blue).

8	**...**	**♗b7**
9	**a3**	

Restricting black's play by preventing ♘g4 and ♗g4. Also, preparing to meet black's a/b pawn pushes by adding the option of fixing the queen-side pawns.

9	**...**	**♗d6**
10	**♘e5**	**O-O**
11	**♕e2**	**♘d7?!**

While seemingly logical in asking white what to do with ♘e5, the problem here is that an important king-side defender is displaced. White has pieces and pawns ready for an attack against the king.

12	**O-O**	

Castling supports the f-pawn push. That was probably the best attacking idea available. Pawn to f5 would begin to question black's already weakened control of the center.

12	**...**	**♘c×e5**
13	**d×e5**	**♗e7**

♗c5 would have been met with immediate b4 gaining a tempo for white (13...♗c5 14 b4 ♗e7.) ♗c7 would have blocked the rook's access to c-file. With all likelyhood, the best move was played.

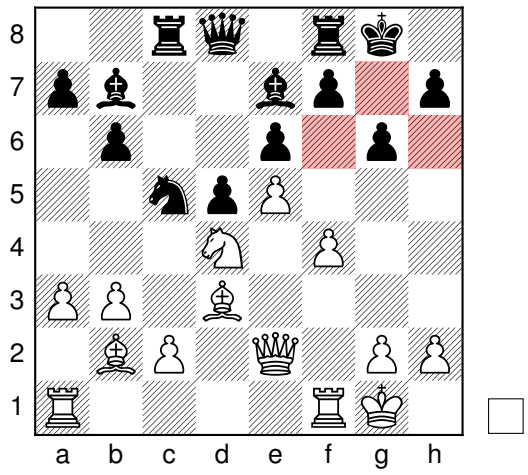
14	**♘f3**	

Now aiming for ♘d4, blocking the d-pawn, and thus, keeping ♗b7 off the play. Note that white's counterpart bishop is significantly better, since it can reroute itself via c1 if necessary, and it already supports the f-pawn push nicely by protecting e5.

14	**...**	**♘c5**
15	**♘d4**	**♖c8**

Rooks belong to open files.

16	**f4**	**g6?!**



While not outright losing, it can be questioned whether black had to weaken the king-side pawn

structure, and particularly the dark squares. In fact, this move can be considered as a strategic blunder, as it opens new avenues for white's attack.

If black was afraid of ♗×h7+ or ♕h5, the moves here to play were either ♘×d3 or h6.

Stoofvlees was expecting ♖c7, which adds defenses for the 7th rank and prepares for counterplay in the c-file. But before playing . . . ♖c7, the move that had to be calculated carefully was ♗×h7+. But it turns out that the bishop sacrifice would not have been mating, as black is just in time to organize defenses. Variation 16. . . ♖c7 17 ♗×h7+ ♔×h7 18 ♕h5+ ♔g8 19 ♖f3 ♕e8 20 ♖h3 f5 21 ♕h8+ ♔f7 22 ♕h5+ ♔g8 23 ♕h7+ ♔f7 would end peacefully.

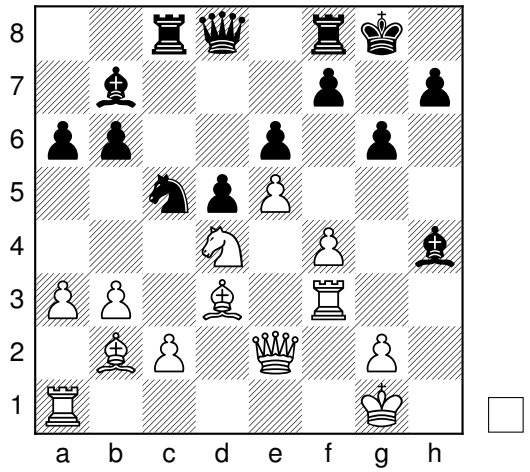
17 ♖f3 a6

White wastes no time, but the same cannot be said about black. Black either needed to start diluting and preparing for the attack by, e.g., ♘×d3, ♔h8, and ♖g8 to avoid pins and putting counterpressure on the g-file; and/or start preparing active counterplay with ♖c7 intending to make something happen on the semi-open c-file. ♖c7 would also add a defender on the nth7 rank provided ♗e7 moves somewhere with f5.

18 h4

Stoofvlees offers a pawn in hope for opening files for attack. With this Greek gift that should not be accepted, Stoofvlees's evaluation jumped a bit. However, Stockfish suggests that black is still holding with ♘×d3.

18 . . . ♗×h4?



Black was too greedy. White has now the h-file available with strong attack potential, and an engine as strong as Stoofvlees will not miss the opportunity.

19 ♖h3! ♗e7

Pawn to g4 is coming, so the bishop needed to run either now, or a concrete plan was needed to meet the follow-up move ♕h2. But regardless, there is no more defense anymore for black if white plays precisely.

An example line: 19. . . ♖c7 20 ♕g4 ♘×d3 21 c×d3 ♗e7 22 ♖h6 ♔g7 23 f5! e×f5 24 ♕h3 ♖h8 25 e6! f6 26 ♖f1 ♔g8 27 ♘×f5! ♗c5+ 28 ♘d4 ♖g7 29 b4 ♗e7 30 ♘e2 a5 31 ♕e3 ♗c8 32 ♗d4 a×b4 33 a×b4 ♕d6 34 ♗×f6 ♕×e6 35 ♕d4 ♗f8 36 ♖h4 h5 37 ♘f4 ♕d6 38 ♗e5 ♕×b4 39 ♕×d5+ ♖f7 40 ♗×h8 ♕c5+ 41 ♗d4 ♕×d5 42 ♘×d5 and white wins easily with an extra rook.

20 g4 ♘×d3
21 c×d3 b5
22 f5 ♗g5

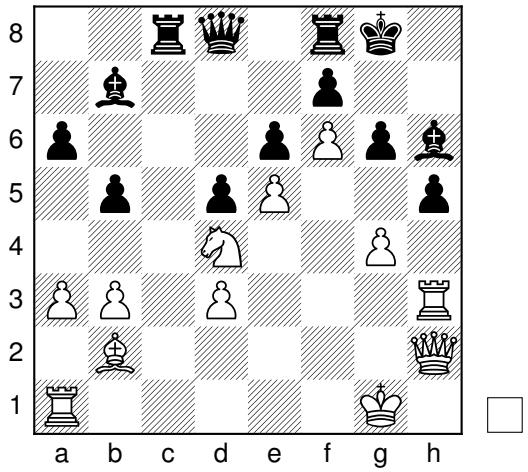
The position is already desperate. While allowing the bishop to get trapped with f6, the alternatives were not much better. For example:

(a) 22. . . e×f5 23 ♕h2 h5 24 g×f5 ♗g5 25 ♔h1 ♕c7 26 ♕g2 ♕e7 27 ♖g1. The attempt to

save the bishop will end quickly: 27... f6 28. e×f6 ♗×f6 29. ♕×g6+ with forced mate in 13.

(b) 22…♗c5 23 f6 ♖e8 24 ♕h2 h5 25 ♕f4 ♕b6 26 ♖×h5 with mate in 10.

23	**♕h2**	**h5**
24	**f6**	**♗h6**



25	**♖×h5!**	

Nice finishing touch. With the best play, mate would follow in 12 more moves. The final idea here is to force the queen to g7 with an unstoppable mate. The bishop can be dealt with g5.

25	**…**	**g×h5**

25…♗e3+ would have postponed the inevitable by one move. The most resilient continuation was 26. ♔f1 g×h5 27. ♕×h5 ♕a5 28. b4 ♕c7 29. ♖e1 ♗f4 30. g5 ♗×e5 31. ♘e2 d4 32. ♕h6 ♗g2+ 33. ♔f2 ♗g3+ 34. ♔×g2 ♕c6+ 35. ♔h3 ♕g2+ 36. ♔×g2 ♗×e1 37. ♕g7#

26	**♕×h5**	**♗f4**
27	**♖f1**	

Faster was to immediately cut the bishop from defending with 27. g5 with mate in 6.

27	**…**	**♕a5**
28	**b4**	**♕a4**
29	**g5**	**♖c1**
30	**♗×c1**	**♗h2+**
31	**♕×h2**	**♕×b4**
32	**a×b4**	**♗c6**
33	**♕h6**	**♗a8**
34	**♕g7#**	

White wins.

Chapter 2

Strategic Advantage

2.1 LCZero v0.21.1-nT40.T6.532 – Bluefish Dev

TCEC S15 Bonus: Bluefish vs Leela Jhorthos, Game 2

E05 CATALAN, OPEN, CLASSICAL LINE

April 28, 2019

This game is a remarkable example of taking and keeping strategic advantage. After the opening phase, it feels that white dictated the direction and black reacted, with black never having a say for where the game would be heading to.

Following concepts exemplified:

1. Restricting opponent pieces for strategic advantage

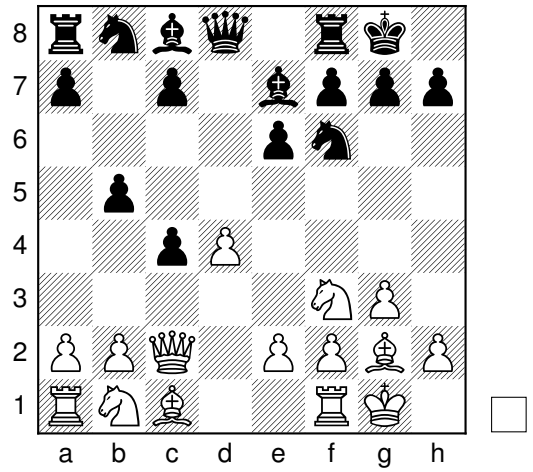
2. Shifting focus from one side of the board to another, to take advantage of better piece mobility

The game started from the regular starting position.

1	**d4**	**♘f6**
2	**c4**	**e6**
3	**g3**	

The Catalan opening seems to be a favoured Queen's Gambit opening for the current NN engines.

3	**...**	**d5**
4	**♗g2**	**♗e7**
5	**♘f3**	**O-O**
6	**O-O**	**d×c4**
7	**♕c2**	**b5?!**



Typical play here is 7... a6, instead. Trying to hold on to c4 allows white to get a significant amount for activity for the pawn.

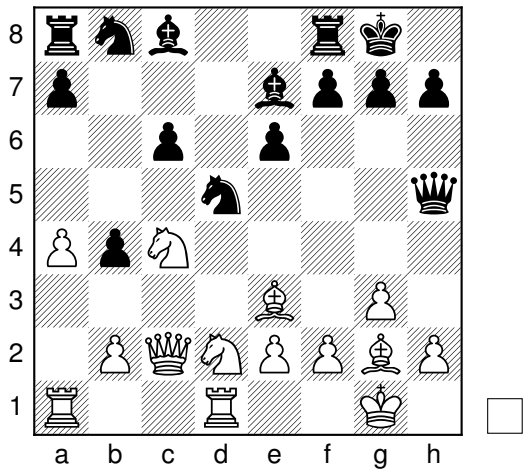
8	**a4**	**b4**
9	**♘fd2**	

While 9. ♘bd2 looks perhaps a bit more natural and is slightly more popular in the Lichess GM database, 9. ♘fd2 has better statistics for white. The merit of the move in the game is that it unblocks

the bishop's vision, adding pressure towards the a8 square.

Black has here three options to protect the rook. 9... ♘d5 gives up the pawn back and allows black to develop the queenside. 9... b3 10. ♕×c4 ♗a6 11. ♕×b3 and either 11... c6 and black will get one pawn back, or 11... ♘d5 for trading one pawn for better development. A third and the most popular option was played in the game, postponing the resolution of the queenside development.

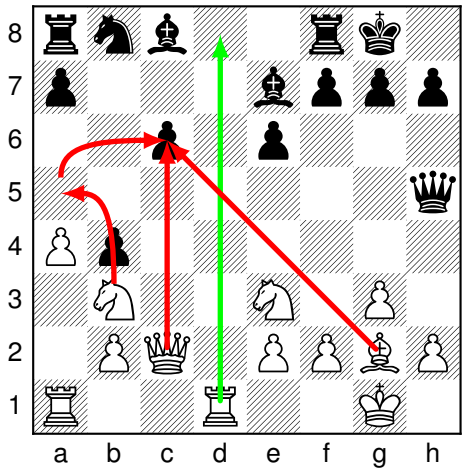
9	**...**	**c6**
10	**♘×c4**	**♕×d4**
11	**♖d1**	**♕c5**
12	**♗e3**	**♕h5**
13	**♘bd2**	**♘d5!?N**



13... ♘g4 was the most popular move. This move has the merit over the played move that it effectively forces 14. ♘f3 or 14. ♘f1 in order to stop the mate threat, unless white decides to weaken the king-side pawn structure by h3 or h4. This deflects the knight from the d2 square.

13... ♘d5 would make more sense if the purpose was to block the g2-bishop eyeing towards the black's queen-side corner. However, the intention was to trade the knight with the bishop.

14	**♘b3**	**♘×e3?!**
15	**♘×e3**	

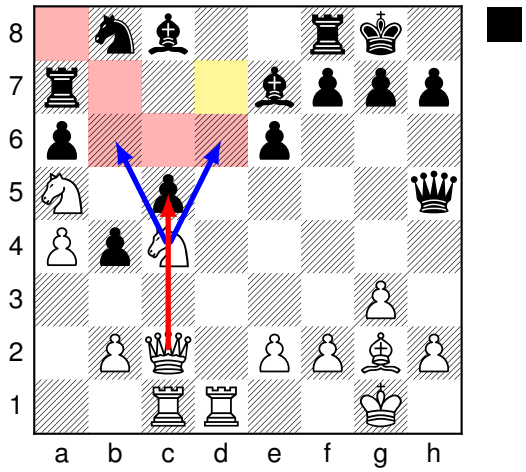


Now the small subtlety of playing 13... ♘d5 instead of 13... ♘g5 becomes obvious: black is going to have some serious questions to answer on developing the queen side, as the c6 pawn is starting to become a liability. Further, white has gained the d-file, thwarting development ideas such as ♗d7 with ♘a6 for now. So, black goes with another typical development idea in Catalan: push the a-pawn, play ♖a7, and then untangle with moves such as ♗g7 and c5.

15	**...**	**a6**

Now move ♖a7 is enabled. The move 15... a6 over the move 15... a5 has the following two benefits: (1) The a-pawn will not become a target for a later ♘×a5, and (2) the pawn controls the b5 square after c5.

16	**♘c4**	**♖a7**
17	**♖ac1**	**c5**
18	**♘ba5**	



The b4-pawn is now finally protected, but black's problems are still far from over. The black queenside is a minefield due to white's control, and the d7-square is a bottleneck for black development. Further, should the e7-bishop move, white is ready to jump the c4-knight exposing the threat to take the c5-pawn.

Therefore, it is no wonder that it is already getting difficult to find any useful moves for black:

(a) 18... ♖c7 does not help development, since the c6 square is already attacked twice by white. Similarly, a natural move 18... ♗g7 cannot be played.

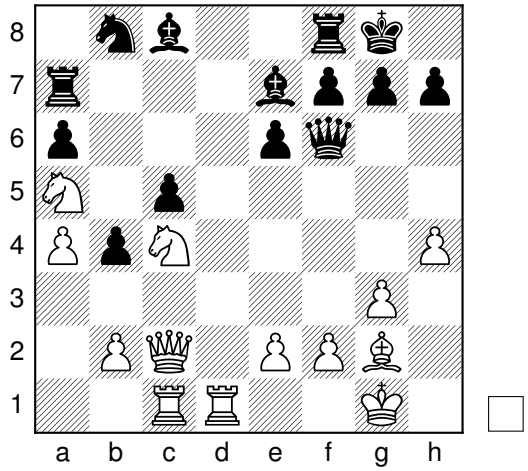
(b) 18... ♕g6 only asks white to make another developing move such as 19. ♖d3/e4/♗e4 .

(c) 18... ♖d1 allows white to practically force 19. ♖×d8+ ♗×d8 20. ♖d1 ♗×a5 21. ♘×a5 ♕g5 22. ♖d6 ♖c7 23. ♕d1 ♘d7 24. ♖c6 ♖×c6 25. ♘×c6. The 26... c4 move here would be met with 27. ♕d6 threatening to either win a piece by ♘e7+ or a pawn by ♕×b4 while still keeping black's queenside development cumbersome.

(d) 18... ♗d7 with a possible continuation 19. b3 ♖c7 20. ♕d3 ♖d8 21. ♕e3 ♗e8 22. ♕f4 ♖cd7 23. ♖×d7 ♗×d7 24. e3 threatening ♕c7, for instance.

Black simply does not seem to be able to find any useful counterplay, so black decided to play a semi-waiting queen move, reinforcing the d8 square.

18	**...**	**♕g5**
19	**h4!**	**♕f6**

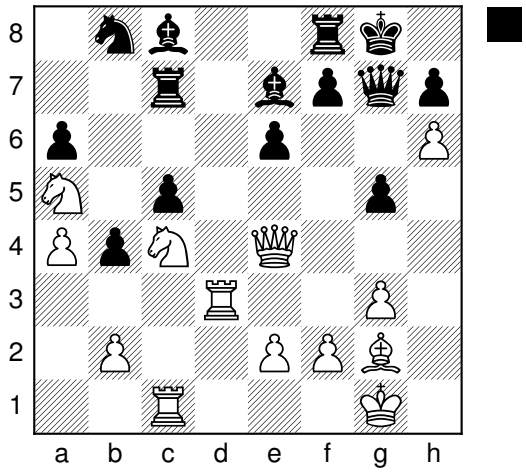


As black is unable to make progress, white is now starting to improve her position. The move h4 not only restricts the queen, but it also signals white's intention to shift the play in the king-side. Often such ideas are useful when one side has better access to squares.

20	**♕e4**	**♖c7**
21	**♖d3**	**g5**

Black was soon forced to do something. If black would continue to play waiting moves, then white would soon break black's position. An example line 21...♔h8 22 b3 ♔g8 23 ♖cd1 ♔h8 24 ♖f3 ♕h6 25 ♕e5 with unparriable threats. For example: 25... ♖d7 26. ♖fd3 ♖×d3 27. ♖×d3 ♕c1+ 28. ♗f1 ♘d7 29. ♕c7 ♗f6 30. ♘c6 a5 31. ♘a7 ♗a6 32. ♖×d7 with no hope for black.

22	**h5!**	**♕g7**
23	**h6!!**	

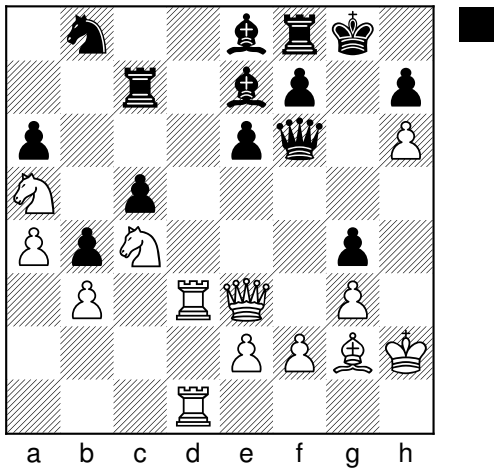


With the h-pawn moves, white continues to strangle black's position, and begins to threaten a kingside attack. Note that the h6-pawn cannot be taken as black queen must be ready to stop ♕e5, as that would win a piece due to the skewer (23... ♕×h6?? 24. ♕e5 ♖d7 25. ♕×b8).

23	**...**	**♕f6**
24	**b3**	

Solidifying move by white and preventing potential tactics by ...b3. Note that often with such moves, white needs to pay attention not to trap pieces, as b3 was the natural escape square for the a5-knight. However, here white could simply move the c4-knight somewhere to provide another escape square, should the need arise.

24	**...**	**♗d7**
25	**♕e3**	**g4**
26	**♖cd1**	**♗e8**
27	**♔h2**	



The king move is a subtle move in this complex position. Black is now almost in a Zugswang where it would be preferable not to make a move at all. The king move is also preparatory to avoid tempo loss by ♔h8/♖g8+ in some variations after both the g-pawns have moved to other files, as well as to prepare Rh1 to protect the h6-pawn with possible rook lift ideas. Finally, ♔h2 prepares ♔g3 to attack the g4-pawn should the opportunity arise. Let us review some of black's choices:

(a) 27... ♕f5 would essentially transpose to the game continuation after 28. ♕f4

(b) 27... ♔h8 28. ♘e5 ♕f5 29. ♕f4 ♕×f4 30. g×f4 and white maintains the advantage with a continuation such as 30... f6 31. ♘ec4 ♗g6 32. ♖3d2 ♖g8 33. ♔g3 ♗f8 34. e3 ♗×h6 35. ♖d8 ♖e7 36. ♘b7 ♖×d8 37. ♖×d8+ ♖e8 38. ♖×e8+ ♗×e8 39. ♘×c5. Note that a move 29... ♕h5+ would not save the day, since 30. ♔g1 ♕f5 31. ♕×f5 e×f5 would just leave white with a better pawn structure with otherwise similar prospects.

(c) 27... ♗d7 28. ♘e5 ♗e8 29. ♘×g4 and white simply wins a free pawn.

(d) 27... ♖a7 followed by, *e.g.*, 28. ♕e4 ♕×h6+ 29. ♔g1 ♖c7 30. ♕×g4+ ♕g5 31. ♕×g5+ ♗×g5 32. ♖d6 and white gets a strong

foothold into black's territory, renewing the question on the queen-side weaknesses. Also, the exchange sacrifice after 28. ♖d6 ♗×d6 29. ♖×d6 ♖d8 30. ♖×d8 ♕×d8 31. ♕e5 f6 32. ♕×e6+ looks interesting with good compensation, although probably not necessary to take a risk.

(e) 27... ♖a7 28. ♘b7 ♕g5 29. ♕×g5+ ♗×g5 30. ♘×c5 ♖c7 31. ♘e4 ♗×h6 32. ♘f6+ ♔g7 33. ♘×e8+ ♖×e8 34. ♖d4 does not look very attractive, either.

None of the options look particularly good, so black went with the straightforward queen exchange.

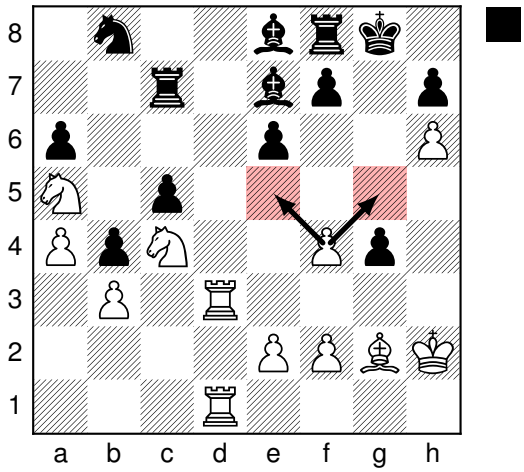
27 ... ♕g5
28 ♕f4!

White does not exchange the queen immediately, but forces better terms. The exchange on f4 square prevents black to get into the game, which 28 ♕×g5+ ♗×g5 29 ♖d6 ♗×h6 30 ♖b6 ♗d7 31 ♘e5 ♗g7 would have allowed.

28 ... ♕×f4

Black is forced to exchange the queens on white's terms. Note that curiously, black cannot make a waiting move 28... ♖c8 asking again to exchange the queens on the g5 square. The sequence after 29. ♕×g5 no longer works because the move ♗d7 is no longer possible because the rook had moved. Also, the intermediate queen check is no good either, because after 28... ♕h5+ 29 ♔g1 e5 30 ♘×e5 ♗g5 31 ♕f5 ♕×h6 32 ♘×g4 ♕g6 33 ♕e5 black simply drops a piece under white's threats.

29 g×f4



The pawn now controls two important squares: e5 provides an anchor point for a knight, and g5 protects indirectly the h6-pawn by preventing ♗g5.

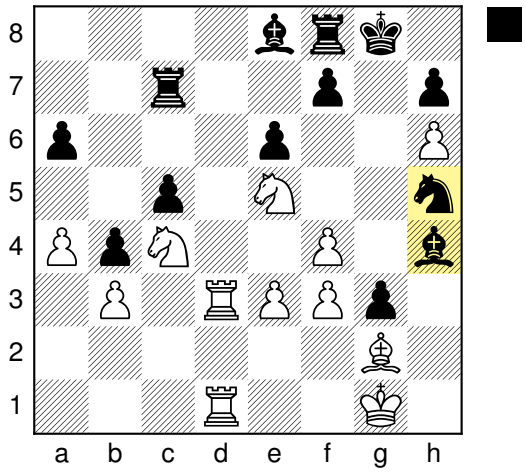
29 ... ♘d7
30 ♘c6 ♗h4
31 ♔g1

The threat was more important than the execution. Now its time to get back and protect the f2-pawn.

31 ... ♘f6
32 ♘6e5 ♘h5
33 e3 g3

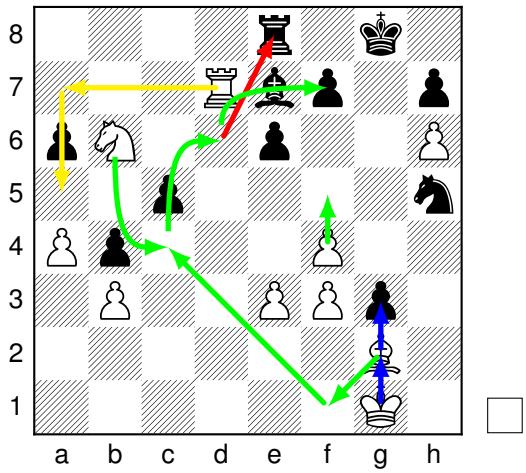
Black is trying to create counterplay by trying to open the g-file and repositioning minor pieces in the h-file. However, white has a simple answer:

34 f3!



White simply makes black's own pawn a shield for the potential attack on the g-file, claiming that the pawn is rather weak. Now the black minor pieces on the h-file are irreparably mispositioned, and white can concentrate again on the queen-side. This time black has no answer to prevent white's penetration with the rooks.

34	**...**	**♗e7**
35	**♘d7!**	**♗×d7**
36	**♖×d7**	**♖fc8**
37	**♘b6!**	**♖×d7**
38	**♖×d7**	**♖e8**



White has now multiple pieces for the plan to finish the game:

(a) The rook can claim the a5-pawn, creating a passed pawn for white. The cost is some time. (Yellow arrows)

(b) The king can march to g2 after the bishop has moved. Then, if the black knight moves, the g3 pawn can be taken. (Blue arrows)

(c) The knight can move to d6 driving ♖e8 away, allowing the white rook to add additional pressure on f7. The bishop can reposition to c4, and the pawn can move to f5 adding even more pressure to the e6/f7 squares. This should allow white to create passed connected passers on e/f-files. (Green arrows)

Meanwhile, white's h6-pawn has now become weak and cannot be protected. Some precision is still required.

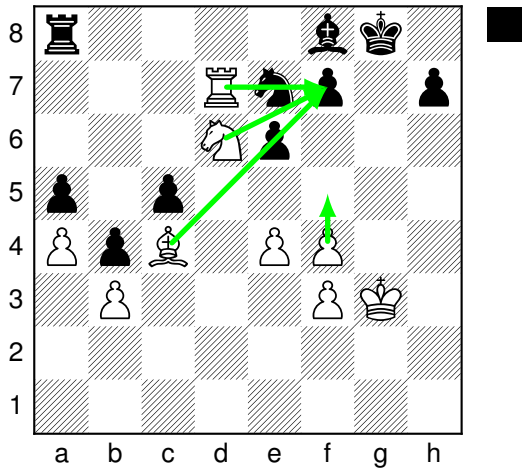
39	**♗f1**	**♘f6**
40	**♖b7**	**♘d5**
41	**♘c4**	**♗f8**
42	**♔g2**	**♗×h6**
43	**♔×g3**	

The king has now claimed the g3 pawn. Note that 40. ♖a7 would probably have been slightly more precise, although it does not matter.

43	**...**	**♗f8**
44	**e4**	**♘e7**
45	**♘d6**	**♖a8**
46	**♖d7**	

A waiting move to ask black to move again, and to prevent the black to move ... ♖d8 with tempo on the knight.

46	**...**	**a5**
47	**♗c4**	



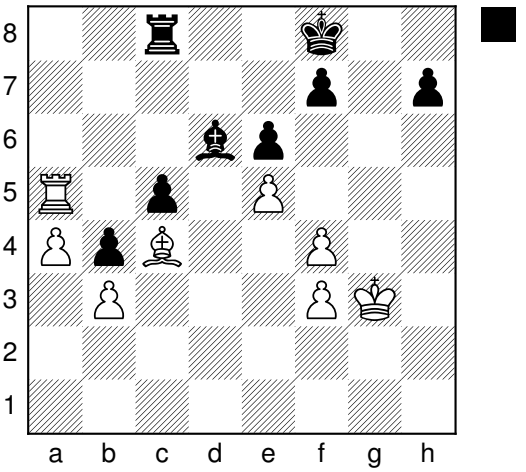
Now focusing on the f7 pawn with f4 pawn waiting to be moved.

47	**...**	**♘c8**
48	**♘×c8**	**♖×c8**

The pawn move f5 is now temporarily discouraged due to tactics: 49 f5 ♖c7 50 ♖×c7 ♗d6+ 51 f4 ♗×c7. However, this would not be a disaster, since after 52. f×e6 f×e6 53. ♗×e6+ ♔g7 54. e5 the opposite-colored bishop ending would still be winning for white. White's connected passed pawns and white king's access to black's a-b-c pawns are strong enough to win the game. A bishop cannot usually stop attack on both sides of the board, since one side can deflect the bishop while the other side decides the game.

However, white did not go into such complications, and simply switched to taking the a5-pawn first and then resolving the pin by moving the e4-pawn before pushing the f-pawn.

49	**♖a7**	**♗d6**
50	**♖×a5**	**♔f8**
51	**e5**	

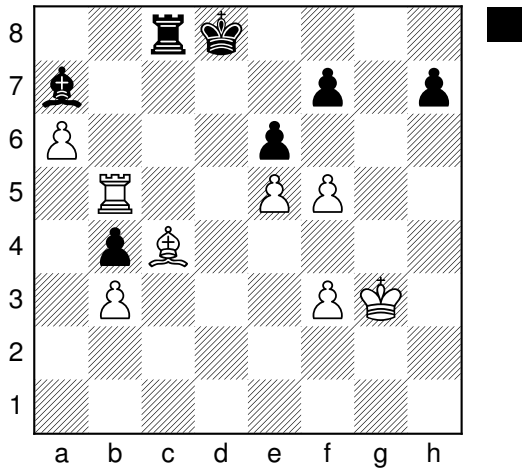


Black has no good squares for the bishop. ♗b8 would lose quickly to ♖a8 pinning, and then white pushing the a-pawn.

51...♗e7 would postpone the game by some moves with the following possible continuation: 52. ♗e7 52. ♖a7 ♔e8 53. ♗a6! ♖b8 54. ♗b5+ ♔f8 55. ♗c4. Note the move 53. ♗a6! . It drives the rook away from the c8-square, forcing ... ♔f8 after the check. The king cannot come to d8-square after ...♖d8 since it's already occupied, or after ...♖b8 since then white would play ♖b7+ with reveal check, winning the rook.

So, black sacrificed the c5-pawn in order to be able to block the a-pawn with a bishop.

51	**...**	**♗c7**
52	**♖×c5**	**♔e7**
53	**a5**	**♔d8**
54	**a6**	**♗b6**
55	**♖b5**	**♗a7**
56	**f5**	



White is now finally going after the f7-pawn. In opposite-color bishop endings, it is important to have two passed pawns with some distance to make it impossible for the bishop to stop both.

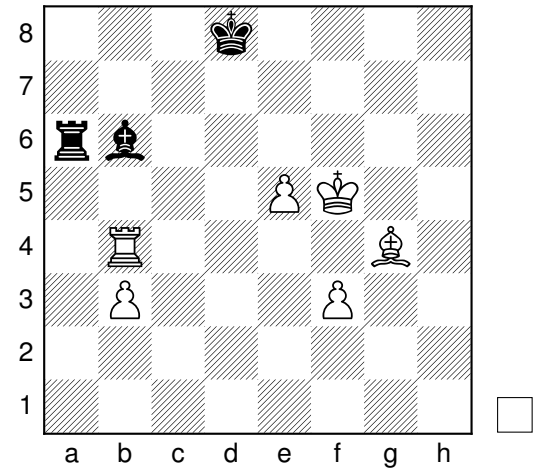
56	**...**	**♖b8**
57	**♖a5**	

White could have also exchanged the rooks. The rest is simple technique.

57	**...**	**e×f5**
58	**♗×f7**	**♗b6**
59	**♖a2**	

The final pitfall was the natural-looking ♖b5. This would have blundered the win away to simple tactics: 59 ♖b5 ♗f2+ 60 ♔×f2 ♖×b5 with a disappointing draw. But now the rest is simple technique.

59	**...**	**♖c8**
60	**♔f4**	**h5**
61	**♔×f5**	**♖c7**
62	**♗×h5**	**♖h7**
63	**♗g4**	**♖c7**
64	**♖a4**	**♖a7**
65	**♖×b4**	**♖×a6**



A quick way to force mate would have been: 66 ♖a4 ♖a5 67 ♖×a5 ♗×a5 68 ♔e6 ♔e8 69 f4 ♗b4 70 f5 ♔f8 71 f6 ♗e1 72 ♗h5 ♗d2 73 ♔d5 ♗c3 74 b4 ♗×b4 75 e6 ♗a3 76 ♔c6 ♗e7 77 f×e7+ ♔×e7 78 ♗f7 ♔f6 79 ♔d6 ♔f5 80 e7 ♔e4 81 e8♕+ ♔d3 82 ♕e1 ♔c2 83 ♕e3 ♔b2 84 ♕d2+ ♔b1 85 ♗e6 ♔a1 86 ♕c1#

However, in this game, Leela did not have the distance-to-zero (DTZ) tablebase files available and was on her own after reaching the winning position as per the win-draw-loss (WDL) files. As is characteristic to the current neural network (NN) engines, the endgame was not concluded quickly. The NN engines are simply interested in winning the game, not winning the game quickly.

66 f4 ♗c5 67 ♖c4 ♗f2 68 ♔e4 ♖g6 69 ♔f3 ♗h4 70 b4 ♖a6 71 ♗f5 ♗e1 72 b5 ♖a3+ 73 ♔g4 ♖g3+ 74 ♔h5 ♗a5 75 ♖a4 ♗b6 76 ♗g4 ♔e8 77 ♔g5 ♗d8+ 78 ♔f5 ♗b6 79 ♖a6 ♗f2 80 ♗h5+ ♔e7 81 ♖e6+ ♔d7 82 ♗e8+ ♔c7 83 ♖c6+ ♔b8 84 ♖c4 ♔a7 85 e6 ♖g7 86 ♔e5 ♗h4 87 f5 ♗e7 88 ♗g6 ♗f8 89 ♖c6 ♖b7 90 ♔f6 ♗e7+ 91 ♔g7 ♗a3+ 92 ♔h6 ♖×b5 93 f6 ♗f8+ 94 ♔h7 ♖b7+ 95 ♗f7 ♗a3 96 ♖c2 ♔b6 97 ♔g6 ♔b5 98 ♗e8+ ♔b6 99 ♗d7 ♖c7 100 ♖×c7 ♔×c7 101 ♔f7 ♗c5 102 e7 ♔×d7 103 e8♕+ ♔d6 104 ♔g8 ♔d5 105 ♕a8+ ♔d4 106 ♕c8 ♗b4 107 ♕d7+ ♔c3 108 ♕e8 ♔d4 109 ♕f7 ♔c3 110 ♕g7 ♗c5 111 ♕h8 ♔c4 112 ♕h7 ♔c3 113 ♕g7 ♔c4 114 ♕h8 ♗d4

115 ♕h7 ♗c5 116 ♕g6 ♔c3 117 ♕f7 ♗d6 118 ♕e8 ♗c5 119 ♔g7 ♔d3 120 ♔g6 ♔d4 121 ♔f5 ♗b4 122 f7 ♔c4 123 ♕g8 ♔b5 124 ♕c8 ♗c5 125 ♕b8+ ♔c4 126 ♕a8 ♗b4 127 ♕a7 ♔d3 128 ♕a6+ ♔d4 129 ♕a8 ♔c4 130 f8♘ ♔d3 131 ♘g6 ♔d4 132 ♘f4 ♗e1 133 ♕a7+ ♔c4 134 ♕b7 ♗c3 135 ♕c8+ ♔b3 136 ♕d7 ♗h8 137 ♕e8 ♗c3 138 ♕f7+ ♔b4 139 ♕g8 ♗e1 140 ♕h7 ♗d2 141 ♕g6 ♔c5 142 ♕e8 ♔d4 143 ♕f7 ♔c3 144 ♕g8 ♗e1 145 ♕h7 ♗d2 146 ♕g6 ♔d4 147 ♕e8 ♔c5 148 ♕a8 ♗e1 149 ♕a7+ ♔b5 150 ♕b7+ ♔c4 151 ♕c7+ ♔b5 152 ♕d7+ ♔b4 153 ♕e7+ ♔b3 154 ♕×e1 ♔c4 155 ♕e8 ♔c5 156 ♕d8 ♔c4 157 ♕f8 ♔b5 158 ♕c8 ♔b6 159 ♕d8+ ♔c5 160 ♕e8 ♔c4 161 ♕f7+ ♔b5 162 ♕g7 ♔c6 163 ♕h7 ♔b5 164 ♕h6 ♔c5 165 ♕h5 ♔d4 166 ♕h4 ♔c3 167 ♕h3+ ♔c2 168 ♕h8 ♔b3 169 ♕b8+ ♔c4 170 ♕a8 ♔c3 171 ♕b7 ♔d4 172 ♕a7+ ♔c3 173 ♕a6 ♔b4 174 ♕b6+ ♔c4 175 ♕c7+ ♔b4 176 ♕d7 ♔c5 177 ♕e7+ ♔c4 178 ♕d8 ♔c3 179 ♕d7 ♔c4 180 ♕e7 ♔c3 181 ♔e5 ♔c4 182 ♔d6 ♔d4 183 ♕d8 ♔e4 184 ♕f8 ♔d4 185 ♕c8 ♔e4 186 ♕d7 ♔×f4 187 ♕c8 ♔e4 188 ♕d8 ♔f4 189 ♕b8 ♔e4 190 ♕a7 ♔f4 191 ♕a6 ♔e4 192 ♕a5 ♔f4 193 ♕a4+ ♔e3 194 ♕a8 ♔f4 195 ♔d5 ♔f5 196 ♕a7 ♔f6 197 ♕b7 ♔f5 198 ♕b8 ♔f6 199 ♔d6 ♔f5 200 ♕a8 ♔f4 201 ♔e6 ♔e3 202 ♔e5 ♔d3 203 ♕a7 ♔c3 204 ♕b8 ♔c4 205 ♔d6 ♔d4 206 ♕e8 ♔c3 207 ♔c5 ♔c2 208 ♔c4 ♔d2 209 ♕e7 ♔c1 210 ♔c3 ♔d1 211 ♕e8 ♔c1 212 ♕e1#. White wins.

Chapter 3

Endgame techniques

3.1 Ethereal 10.88 – Lc0 17.11089

CCCC 1: Rapid Rumble (15|5)
Stage 1 Round 35
B90 NAJDORF, BYRNE (ENGLISH) ATTACK
September 10, 2018

Following concepts exemplified:

1. Prying lines open with pawn-and-piece attacking pawn moves
2. The triangle of interception for pawn and king races
3. Blocking two pawns with a knight

The engines started play from the usual start position.

1	**e4**	**c5**
2	**♘f3**	**d6**
3	**d4**	**c×d4**
4	**♘×d4**	**♘f6**
5	**♘c3**	**a6**

The popular Najdorf variation of the Sicilian defence.

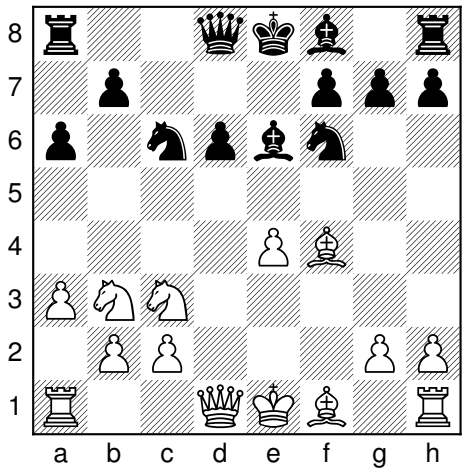
6	**♗e3**	

The Byrne (English) attack.

6	**...**	**e5**
7	**♘b3**	**♗e6**
8	**f4**	

The first move to diverge from the mainlines. The move is not bad at all, but makes the game sharper than the most popular move, 8. f3.

8	**...**	**e×f4**
9	**♗×f4**	**♘c6**
10	**a3?!N**	



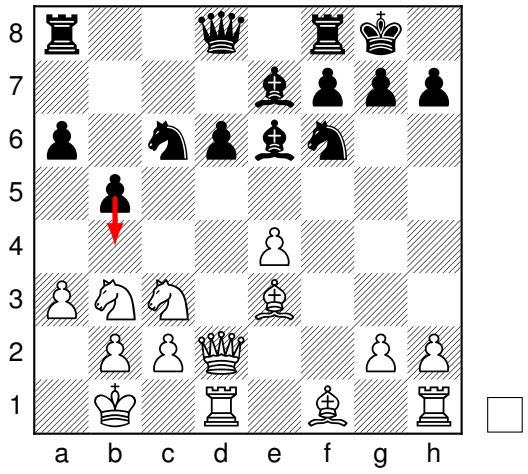
This is a novelty.[1] The main moves here are 10. ♕e2 and 10. ♕d2, preparing for long castling. This seemingly unnecessary move has some potential issues:

1. Black can play Bxb3 and white has to take with the c-pawn, instead of having the additional option to take with the a-pawn.

[1] Lichess masters database, accessed Apr 2019.

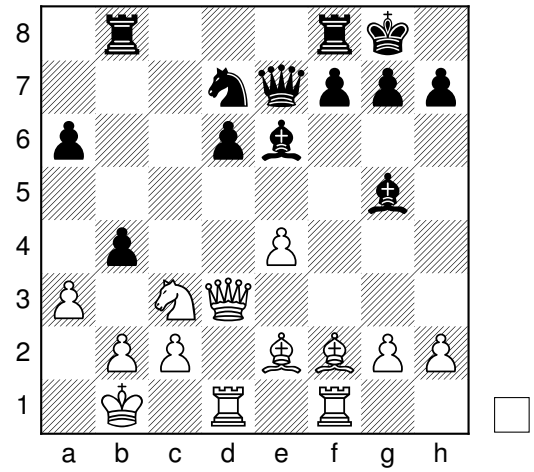
2. Black has later additional options to open Q-side files by pushing the b-pawn.

10	**...**	**♗e7**
11	**♕d2**	**♘h5**
12	**♗e3**	**♘f6**
13	**O-O-O**	**O-O**
14	**♔b1**	**b5**



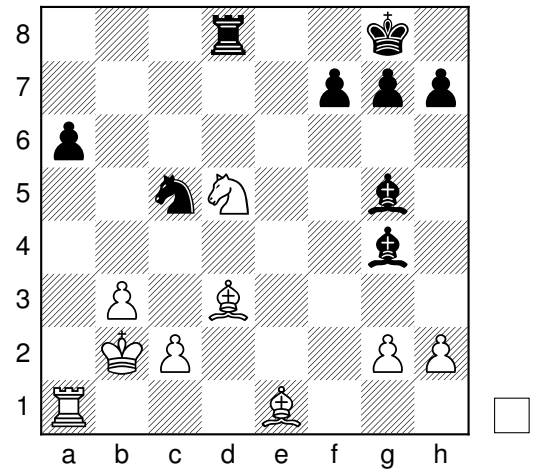
Now exercising black's typical Najdorf plan after opposite-side castling. The threat is now to push b4 and force a×b4.

15	**♘d4**	**♘×d4**
16	**♗×d4**	**♖b8**
17	**♗e2**	**♘d7**
18	**♖hf1**	**♗g5**
19	**♕d3**	**♕e7**
20	**♗f2**	**b4**



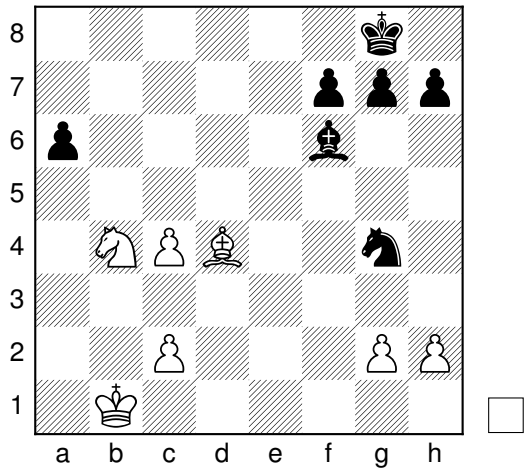
Now finally pushing b4. This is a typical attacking move to pry open files. If the knight moves, b×a3 will be played.

21	**a×b4**	**♖×b4**
22	**♕×d6**	**♖fb8**
23	**b3**	**♕d8**
24	**♘d5**	**♖×e4**
25	**♖fe1**	**♗f5**
26	**♔b2**	**♖c8**
27	**♗d3**	**♖×e1**
28	**♗×e1**	**♗g4**
29	**♖a1**	**♘c5**
30	**♕×d8+**	**♖×d8**



White has managed to temper black's attack. The position is still somewhat complicated, but should be objectively a draw.

31	**♗c4**	**♗e6**
32	**♖d1**	**♖d7**
33	**♗b4**	**♘e4**
34	**♔b1**	**♗d8**
35	**♖d4**	**♘f2**
36	**♗c5**	**♘g4**
37	**♘b4**	**♖×d4**
38	**♗×d4**	**♗×c4**
39	**b×c4**	**♗f6?!**



This is a dubious-looking move, offering extra options for white to drive the endgame into a desireable direction. The game should still be a draw. Black had a number of other options, such as 39... ♘×h2 taking the pawn, 39... f5 hastening the pawn push, or 39... ♔f8 bringing the king to play. But since black played 39... ♗f6?! , white has at least three options to choose from:

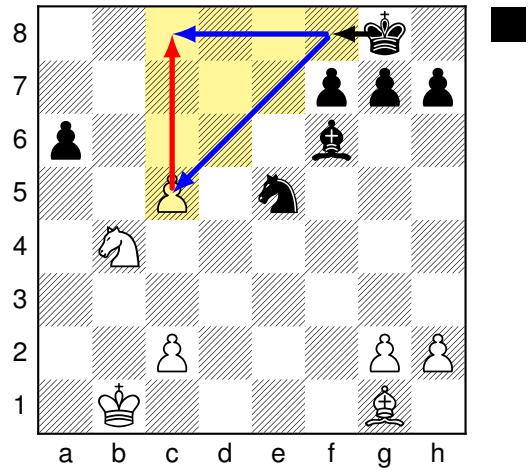
Option 1 — Deflect the knight from attacking h2, gaining a bit of time. 40 ♗×f6 ♘×f6.

Option 2 — Exchange the bishop for the knight, simplifying the position. 40 h3 ♗×d4 41 h×g4. While this position may look a bit weird at first, white's pawns are all in the light squares, untouchable by the black bishop, and white has double passed c-pawns while black's a-passer is weak.

But white decided to go with the third option: ♗g1. This move has multiple purposes: (1) it protects h2; (2) it protects the next square for the c4-pawn; and (3) it avoids exchanging pieces. The dark-square bishop alone cannot support the advancement of the c-pawn, and the knight alone is clumsy. But the bishop and the knight generally work well together to control squares on the way of the pawn. This was also the best choice for white.

40	**♗g1**	**♘e5**
41	**c5**	

Now is the time for black to play ♔f8. The black king needs to move in time to stop the c5 pawn. Highlighted is the triangle of interception where the king needs to be after black's move in order to win the race.

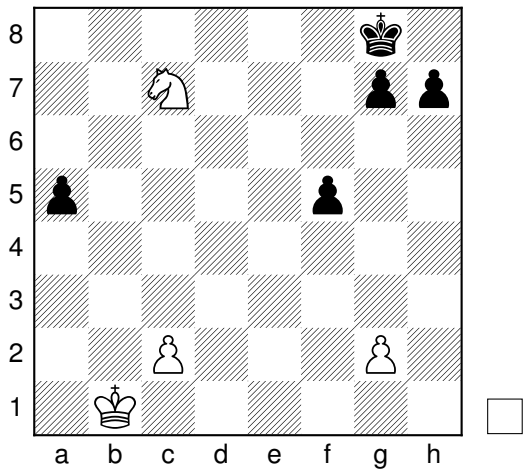


However, black did not play ♔f8 and black pieces alone cannot block or win the passed pawn. Preventing c8♕ will now cost a piece.

41	**...**	**a5??**
42	**c6**	**♗d8**
43	**♗d4**	**♗c7**

Black at least gets now two pawns for the piece. Note that 43...a×b4 44 ♗×e5 ♔f8 45 c7 ♗×c7 46 ♗×c7 would have been even worse for black.

44	**♗×e5**	**♗×e5**
45	**♘a6**	**♗×h2**
46	**c7**	**♗×c7**
47	**♘×c7**	**f5**



Here Leela thinks she is somewhat better with black, and this misevaluation was probably the reason why Leela played the losing . . . 41...a5?? move earlier. A beginning player might make a similar evaluation mistake.

The king-side black pawns surely look intimidating, but this is only superficial. If one does not calculate and/or spot the pattern to stop the king-side pawns, it is plausible to think that black has time to march the king to support the a5-pawn, block white's passed c-pawn, and overrun the king-side with the pawn wall. If white king intercepts this plan, surely the white knight and a pawn cannot stop the black pawn wall?

However, white has an easy plan. The g2 pawn guarantees that at least one black pawn will be exchanged when the black pawns march forward. If the knight is in time, it can stop two black pawns with ease with the L-shaped defensive pattern. In fact, white even has the time to take a small detour with the knight and take the a5, and then to blockade the king-side pawns.

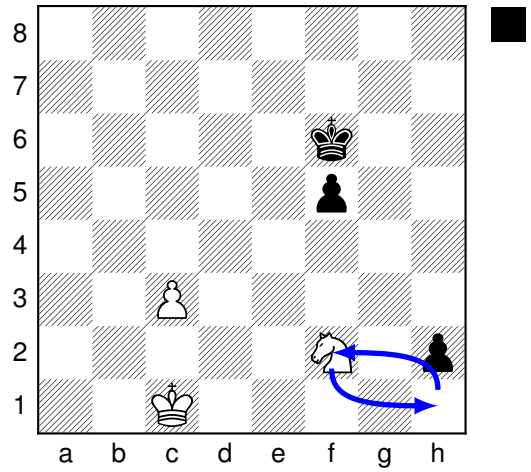
When choosing the blockading squares for the knight, it is here beneficial to block the black pawns as late as possible, because that would require the black king to move beyond the c4 pawn for support, and then c4 pawn would have easy time to march forward and queen.

This plan is a forced win for white with the best but not difficult play.

48	**♘e6**	**♔f7**
49	**♘d8+**	**♔f6**
50	**♘b7**	**a4**
51	**♘c5**	**g5**
52	**♘×a4**	**h5**
53	**♘c5**	**h4**
54	**♔c1**	**g4**
55	**♘d3**	**h3**
56	**g×h3**	**g×h3**

As promised, the g2 pawn was able to take one black pawn from the wall. Two pawns left for black.

57	**c3**	**h2**
58	**♘f2**	

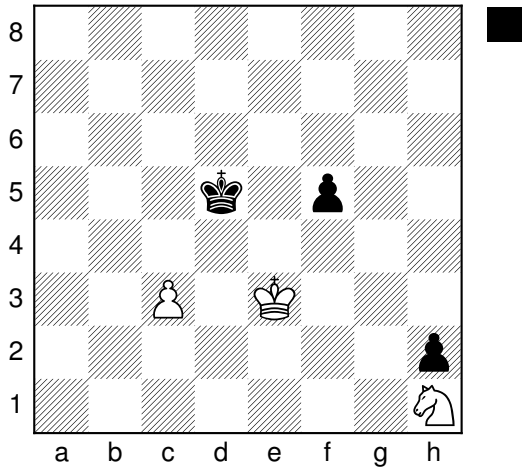


Now the knight controls the h1 and f2 squares and the black pawns cannot advance through those squares without support. However, the king cannot offer assistance, since the c4-pawn would run.

Further, it is important to note that the knight can jump freely between the h1 and f2 squares to lose tempi if necessary. Losing (or gaining) tempi

is often important in king-pawn endings, and this ending is not an exception. With only the white king and pawn versus black king, this would be an easy draw.

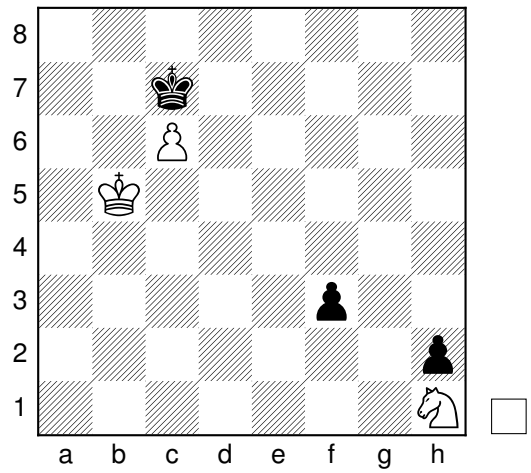
58	**...**	**♔e5**
59	**♔d2**	**♔d5**
60	**♔d3**	**♔e5**
61	**♔e3**	**♔d5**
62	**♘h1**	



The first tempo loss, basically asking black to make another move. However, 62. ♔d3 and losing the tempo later was equally good.

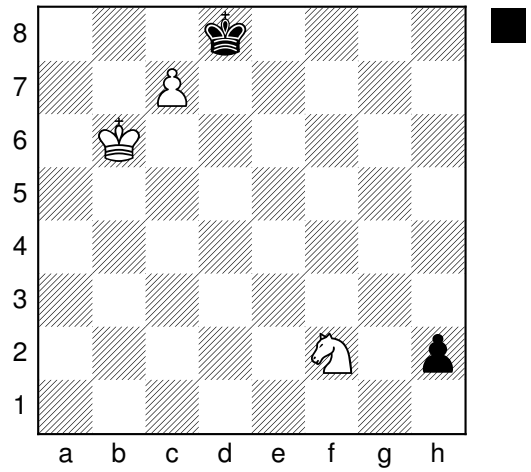
Black has here one last attempt to trick a draw, although this variant was not played: 62...f4+ 63 ♔×f4?? ♔c4 64 ♔g3 ♔×c3 65 ♔×h2 draw. The correct move for white was 63. ♔d3! letting the knight to stop the f-pawn, and not allowing the king to stray away from the all-important c-pawn.

62	**...**	**♔c4**
63	**♔d2**	**♔d5**
64	**♔d3**	**f4**
65	**c4+**	**♔c5**
66	**♔c3**	**♔d6**
67	**♔d4**	**♔d7**
68	**c5**	**♔d8**
69	**c6**	**♔c8**
70	**♔c5**	**♔c7**
71	**♔b5**	**f3**



Black does not want to move the king, as this allows white to push forward with ♔c6. But after the pawn moves are exhausted, black is out of options.

72	**♔c5**	**f2**
73	**♘×f2**	**♔c8**
74	**♔b6**	**♔d8**
75	**c7+**	



Without the knight and black pawn, ♔c8 would be a draw, since the only way (♔c6) white can protect the pawn would lead in a stalemate. But here white can always lose a tempo with a knight

move, and ask black to make another move. So, black simply gives up.

75	**...**	**♔d7**
76	**♔b7**	**♔e6**
77	**c8♕+**	**♔e5**
78	**♕h3**	**♔f4**
79	**♕×h2+**	**♔f3**
80	**♕h3+**	

Final note. Ethereal follows the quickest distance to zero in tablebase win positions. 80. ♔c6 would have delivered the mate one move earlier.

80	**...**	**♔×f2**
81	**♔b6**	**♔e2**
82	**♔c5**	**♔f2**
83	**♔d4**	**♔g1**
84	**♔d3**	**♔f2**
85	**♕g4**	**♔f1**
86	**♔e3**	**♔e1**
87	**♕g1#**	

White wins.

3.2 LCZero v0.21.1-nT40.T8.610 – Stockfish 19050918

TCEC S15 Superfinal, Game 12
C05 FRENCH, TARRASCH, CLOSED
May 12, 2019

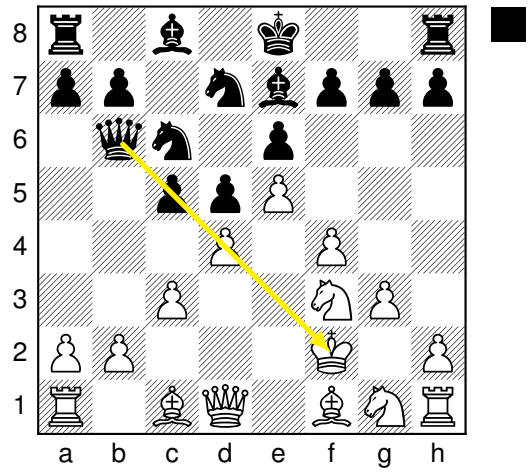
Following concepts exemplified:

1. Importance of the center to shelter the king when the king is not behind pawns
2. Tactical sequences for positional gains
3. Positional analysis to create a fortress
4. Advanced endgame techniques: deflection and skewer

1	**e4**	**e6**
2	**d4**	**d5**
3	**♘d2**	**♘f6**
4	**e5**	**♘fd7**
5	**f4**	**c5**
6	**c3**	**♘c6**
7	**♘df3**	**♕b6**
8	**g3**	**♗e7**

The most popular continuation here is 8...c×d4 9 c×d4 ♗b4+ 10 ♔f2 g5 11 f×g5 ♘d×e5 12 ♘×e5 ♘×e5 13 ♔g2 ♘c6 14 ♘f3 ♗f8 15 b3 ♗g7 16 ♗b2 ♗d7.

9 **♔f2**



End of the opening book. This is a prophylaxis to avoid ♗b4 with a tempo after ... c×d4 c×d4 . See the mainline 8... c×d4 for details. But this move is not completely without drawbacks, and a potential pin has to be considered.

In positions such as this, where the king is not safely behind the pawns after the usual castling, trying to maintain a strong blockaded center is often a wise decision. The reason is quite simple: without the central pawns, black would be able to start attacking the white king using diagonal through the center, often with double attacks of forks and mate-threatening tactics. The importance of the central

pawns is exemplified by the queen on b6 eyeing the king.

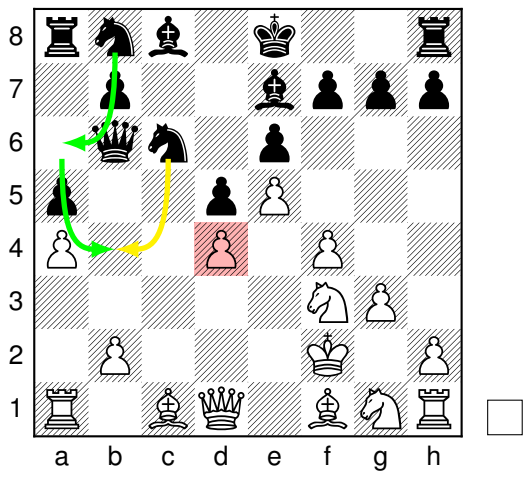
However, since the center is not yet solidified, white has to be careful. For instance, the e5-pawn cannot rely on the protection of the d4 pawn, since after ... c×d4 c×d4 , the white d4-pawn would be pinned. This is not a problem right now, since the e5-pawn is protected by the f4-pawn and the knight on f3. But, the potential pin has to be constantly factored in when calculating the responses to black's attempts to undermine the center with a typical plan of f6.

A slightly more popular move than 9. ♔f2 was to play 9. ♗h3, instead. This discourages . . . f6 ideas by exposing the resulting weakness in the e6-pawn.

9	**. . .**	**a5**
10	**a4**	**c×d4!**

This logical move has many upsides. First, it allows installation of a piece in b4, as c3 will no longer control it. Second, the pawn on d4 becomes a bit weak. Third, white has to spend a tempo in order to move the queen out of the pin soon. Fourth, the c-file is opened, which should favor black due to white's king safety issues if black is able to use by the rooks.

11	**c×d4**	**♘db8**



With a plan of ♘b8–a6–b4 installing an extra strong knight on b4. If white takes, there's another knight ready to step in. Potential weakness on d4 highlighted.

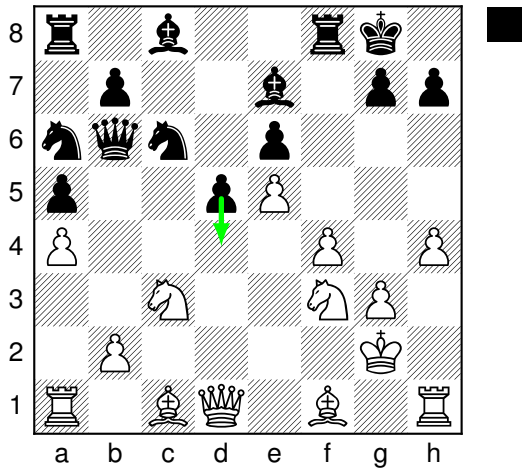
12	**♘e2**	**O-O**
13	**♔g2**	

Now avoiding the pin, simplifying white's play in response to . . . f6. An interesting alternative would have been to play ♗h3 first, allowing white to put some pressure on the pawn on e6, discouraging . . . f6 by positional arguments against the weakened e6.

13	**. . .**	**♘a6**
14	**♘c3?!**	

Here the validity of the move by white can be questioned. While there are certainly ideas of playing ♘a2 to challenge the b4 square and ♘b5 blocking black queen's access to the b-file, more importantly, the move also undermines the protection of the d4 pawn. This allows black to execute a better version of the f-pawn push, forcing white to recapture with the d-pawn instead of the f-pawn. White could have considered playing ♖b1 and ♗e3 first to solidify the d4 pawn, and only then playing ♘c3.

14	**. . .**	**f6!**
15	**h4**	**f×e5**
16	**d×e5**	



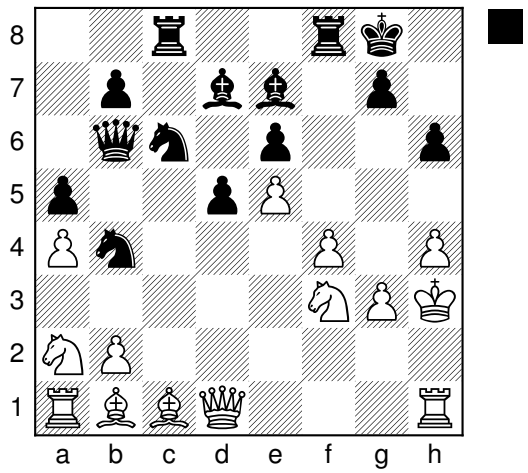
Now the argument against 14 ♘c3 has been made. Capturing with the f-pawn would now have allow black sacrificing the exchange for a knight and pawn as a direct consequence: 16 f×e5 ♖×f3! 17 ♕×f3 ♘×d4 18 ♕d1 with plenty of compensation. Also, the earlier 15. e×f6 ♗×f6 would not have been attractive either, as black would be able to put proper pressure on the pawn on d4. So, white was forced to capture with the d-pawn, and black has now a scary-looking protected potential passer on d5, which is now controlling important squares c4 and e4.

16	**...**	**h6**
17	**♗d3**	**♘ab4**

Black has now finally executed the plan to install an extra strong knight on b4. Sometimes, it is said that knights protecting each other are clumsy, because they're in each other's way. And surely, in endgames, this can be true, especially when the knights are the only thing protecting each other. However, this is different, since the knight on c6 serves as a replacement in case the knight on b4 is captured.

The knight on b4 is ready to support push of the d-pawn up to d3.

18	**♗b1**	**♗d7**
19	**♘a2**	**♖ac8**
20	**♔h3**	



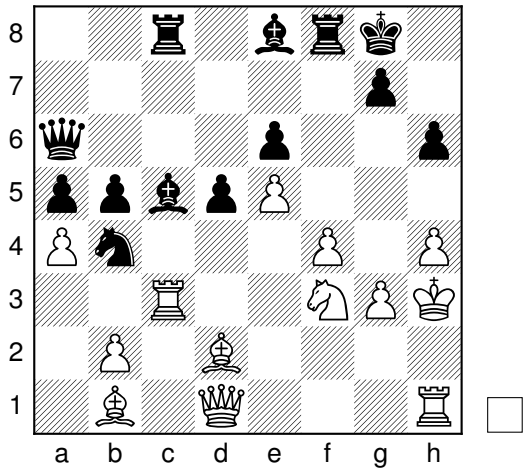
This little move deserves special attention. While 20. ♔h3 may look like a prophylaxis, and it is, it also puts the king in the same diagonal with ♗d7. This makes e6 pawn a bit less weak, since white has to spend an extra tempo to move the king away from the diagonal before e6 can be captured without a pin. However, with the king safety being somewhat questioned, being sheltered by an enemy pawn is probably better than leaving the king in g2 awaiting for tactics. After the knight moves away from c6, the king on g2 would be subject to ...d4 with a follow-up check through the a8-h1 diagonal with tempo gains.

20	**...**	**♗e8**
21	**♘×b4**	**♘×b4**
22	**♖a3**	**♗c5**
23	**♗d2**	**♕a6**
24	**♖c3**	

White is not quite in time to defuse black's pressure. If given a free tempo, say 24...♔h8 25 ♗e3 b6 26 ♘d4 ♗×d4 27 ♗×d4, and white would be able to blockade the d-pawn and perhaps starting to target the pawn on b6 or preparing g4 and f5 with the idea to create a passer on the e-file. However, tempi are a scarcity in chess.

Instead of trying to keep the tension with 24. ♖c3, maybe it was time to relieve the tension a bit with 24 ♗×b4 and go for a draw.

24 . . . b5



One thing that always amazes is how the computers so casually allow pins and leave pieces hanging. But of course, the computers are able to calculate through tactics. Many humans would understandably start looking into solidifying moves such as ♗d7 to prevent ♕c1 pinning the bishop on c5. Instead of solidifying the position and trying to untangle the pins, black complicates the position to win a pawn.

25 ♕c1

Taking the b-pawn would be problematic: 25 a×b5?! ♗×b5→ and white would have annoying threats such as . . . ♗e2 fork to deal with. Pinning the bishop was the better choice, although black can strenghten the protection of the bishop on c5 just in time.

25 . . . ♕b6
26 ♘d4 b×a4

This move was the point of the tactical complications of 24... b5 , changing the queen-side pawn structure to favor black. White is now left with a weak b-pawn against doubled a-pawns and a passer on d5.

27 ♗e3 ♗d7

Now black allows a tactical sequence by white winning an exchange. If black wanted, the next move could have been prevented by 27. . . ♖c7. White enters now in a forced sequence.

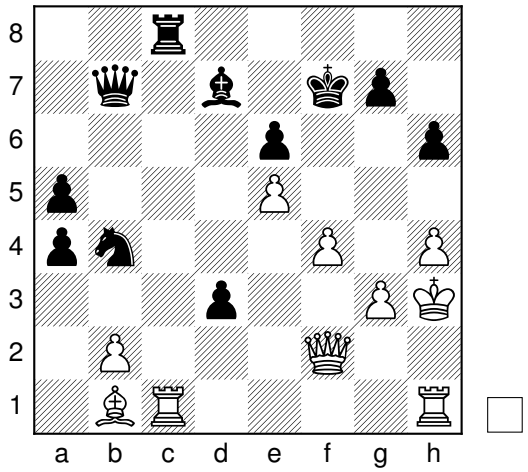
28 ♘f5!? ♗×e3!

Note that giving up the exchange early with 28. . . ♖×f5 29 ♖×c5 ♖×c5 would have given white two pleasant options: (1) 30. ♗×c5 ♕a6 31. ♗×f5 e×f5± taking the exchange with roughly equal pawn structure, as white also has a passer; or (2) 30. ♕×c5 ♕×c5 31. ♗×c5 ♖f7 32. ♗g6 ♗b5 33. ♗×f7+ ♔×f7± delaying the taking of the exchange a bit, keeping the pawn structure but simplifying the positions with exchanges. Both variations are likely winning for white.

29 ♘e7+ ♔f7
30 ♘×c8 ♖×c8
31 ♕×e3 d4

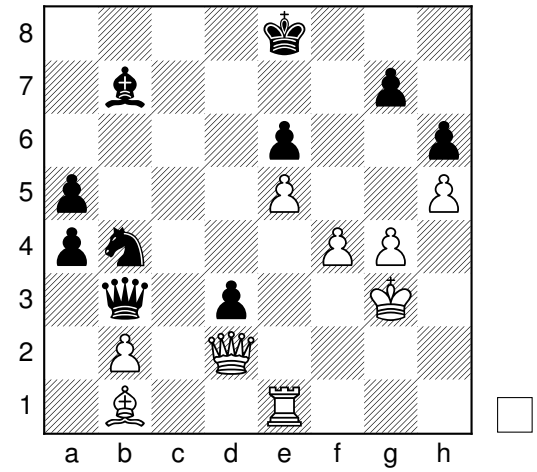
Forcing sequence ends. Here white could have also untangled from the fork by 32. ♕d2, as 32... d×c3?? would fall for 33. ♕×d7+ ♔f8 34. ♕×c8+ with mate soon to follow.

32 ♕f2 ♕b7
33 ♖cc1 d3



Now black has finally been able to push the d-pawn to d3. Since the pawn is protected by the strong knight on b4 and black can enforce the protection by the light square bishop, white has no good way to challenge the pawn on d3. Note that the white king cannot come to assist in the capture either, because after the exchanges, white's king-side pawns would be subject to be captured by the black king.

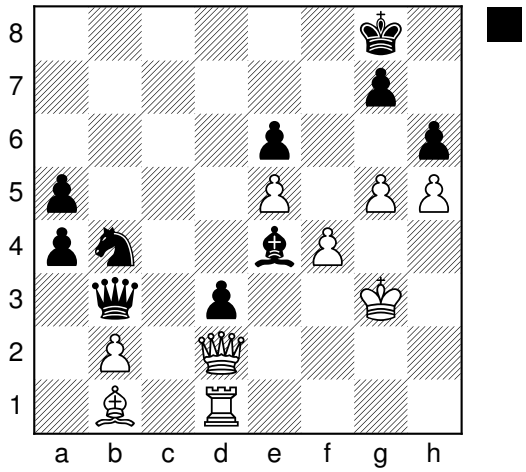
We are now going to fast forward to the next critical position.



The pawn move f5 here is interesting, and it seems a way for white to force a draw, although the play is not forced by either side. For example, 45 f5 e×f5 46 g×f5 ♕d5 47 ♖e3 and black can still hang on to the d3 pawn with 47... ♗c8 with the idea of 48. ♗×d3?? ♗×f5! . But after 48. e6 ♕×f5 49. ♗×d3 it would be black who has to be careful.

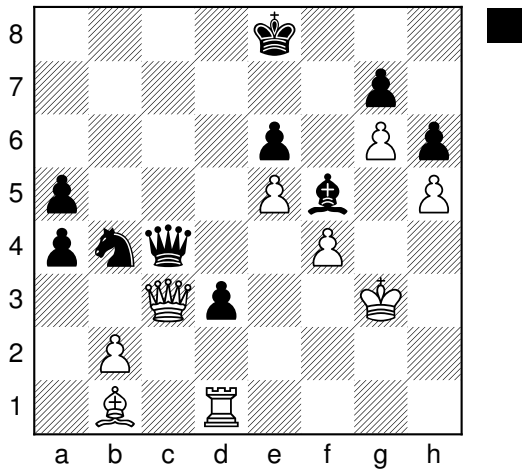
An interesting alternative play for black would be 46... ♘c2 . White has no oblication to take on c2, but it would lead in a nice way to force a draw. 47. ♗×c2 d×c2+ 48. ♖e3 ♕×b2 49. f6. Here black could promote to get another queen, but white would be just in time with 49... c1♕ 50. f7+ ♔×f7 51. ♕d7+ ♔g8 52. ♕e8+ ♔h7 53. ♕g6+ ♔g8 54. ♕e8+ , drawing with perpetual checks.

34	**h5**	**♖×c1**
35	**♖×c1**	**♕d5**
36	**♔h4**	**♗c6**
37	**g4**	**♔e8**
38	**♖f1**	**♕d8+**
39	**♔g3**	**♕d5**
40	**♖d1**	**♕b3**
41	**♖d2**	**♕c4**
42	**♖d1**	**♕b3**
43	**♕d2**	**♗e4**
44	**♖e1**	**♗b7**
45	**♖d1**	**♗e4**
46	**♔h4**	**♕d5**
47	**♕c3**	**♔f7**
48	**♕c7+**	**♔g8**
49	**♕c3**	**♔h7**
50	**♔h3**	**♔g8**
51	**♔h4**	**♔h7**
52	**♔g3**	**♔g8**
53	**♕c8+**	**♔h7**
54	**♕c1**	**♕b3**
55	**♕d2**	**♔g8**
56	**g5**	



Taking the pawn on g5 here might be a small inaccuracy: 56...h×g5 57 f×g5 g6 to prevent white from playing g6 himself with backrank mate threats. An example contituation: 58. ♖c1 ♘c2 59. ♔f4 ♕b7 60. ♗×c2 d×c2 61. ♕d8+ ♔h7 62. ♕f8 g×h5 63. ♕h6+ ♔g8 64. ♕×e6+ , but this should still be about equal.

56	**...**	**♔f8**
57	**g6**	**♔e7**
58	**♔h3**	**♔e8**
59	**♔h4**	**♕c4**
60	**♔g3**	**♗f5**
61	**♕c3**	

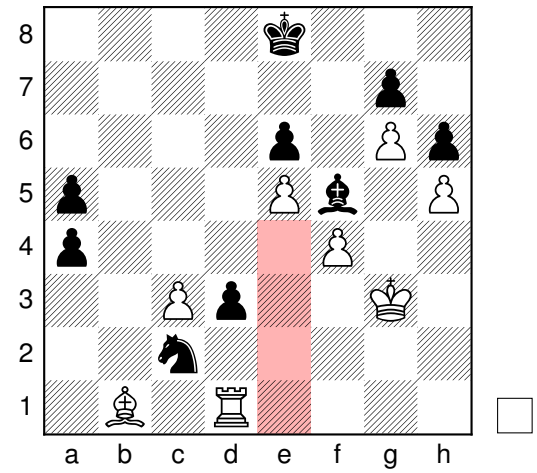


This is a committal move, offering the queen exchange, which black accepts. While the game has been objectively close to a draw and still is, only black can press for the win. With queens on the board, there was always a possibility for some dynamic play.

61	**...**	**♕×c3**
62	**b×c3**	

It is possible that white thought that at this position, the d3-pawn could be somehow won, possibly by giving the exchange back. If that was the case, then white king could hold or take the black pawns on the a-file. However, the d-pawn can never be taken without losing the game.

62	**...**	**♘c2**



This knight now becomes a very annoying piece. Together with the pawn and the bishop, all white king's access squares to the d-pawn are controlled.

63	**♔f2**	

White now has a threat of ♗×c2, and white would be just in time to stop the black pawns.

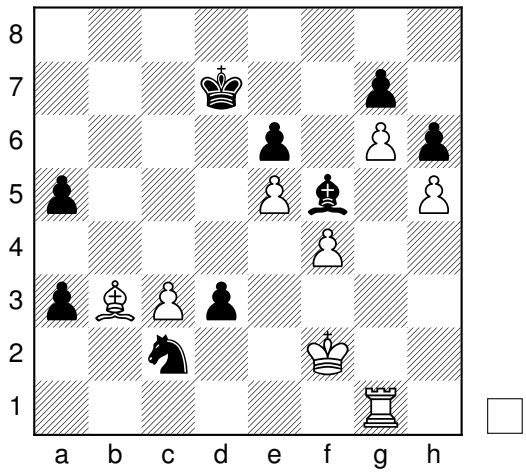
63	**...**	**a3!**

Parries the threat of Bxc2. Now black king is just in time to escort the a-pawns.

64 ♗a2

Taking the c2-pawn would have been a huge blunder. 64 ♗×c2 d×c2 65 ♖c1 ♔d7 66 ♔e3 ♔c6 67 ♔d2 ♔b5 68 ♖×c2 ♔c4! Taking the rook with Bxc2 would have been a huge blunder, since white has a winning king-side pawn break. 69. ♖c1 ♔b3 70. ♖e1 a2 and there's no way of stopping a1♕ other than giving up the rook.

64 ... ♔d7
65 ♗b3 ♔c7
66 ♖g1 ♔d7



This is the final position in the game where the game was still objectively a draw.

67 ♔f3?

Computer analysis suggests that white had at seven moves which would have maintained the draw. Unfortunately, the move played was none of them. The problem with 67. ♔f3? is that it allows 67... d2 with precise tactics as played, winning the game.

The key for white maintaining the draw is to set up a dynamic fortress, preventing black's progress. Let us take a closer look.

Perhaps the easiest way to set up the defenses is the straightforward Ba4+.

67. ♗a4+ ♔c7 68. ♗b3. The bishop on b3 and the pawn on c3 guard the entry squares for the black king, and the bishop additionally stops the immediate a2 and a4. The rook's job is to create enough harassment to prevent the black bishop to enter a square to protect the d1 promotion square, and the d-pawn push. Black would need two tempi to prepare d1♕, but will never have enough time with the best defense.

68... ♔c6 69. ♖d1. This is the easiest plan. Now ♗g4 is prevented, as d3 would be hanging.

69... ♔b5 70. ♖b1. The only move. Black has to move the king away to prevent Bxc2+ exposure check, and thus, a4 or ♗g4 here is prevented.

Black has to be careful not to overextend, and thus has to retreat. The c5-square is off limits for the king here, since that would allow the white rook to enter the nth8 rank. For example: 70... ♔c5? 71. ♗a2! ♔c6. 72. ♖b8 , and the white rook would start picking up the black pawns. There is also no time for black to play d2 in this line, since the rook would simply move to the d-file to pick up the pawn.

70... ♔c6 71. ♖d1 to prevent ♗g4. Black has no way to make progress. The final attempt is to play a4 after Ba2.

71... ♔c7 72. ♗a2 a4. However, ♗a2 and c3 will control the entry squares for the king, and without the king, the d-pawn can never promote successfully.

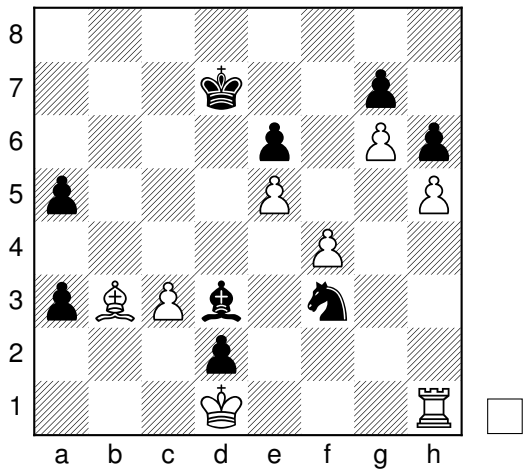
67 ... d2!
68 ♔e2 ♘e1!

The d2-pawn is untouchable, 69. ♔×d2 ♘f3+ and black picks up the rook.

69 ♔d1 ♘f3

The pawn on d2 is now protected. However, precise play is still needed for conversion, but that is no problem for Stockfish.

70 ♖h1 ♗d3



Black's threat here is to play ♗b1 and then deflect the white bishop with a4, and when the bishop is no longer controlling the a2-square, then play a2 and a1♕. But that has to be prepared by moving the queen out of ♗×a4+ check.

71 ♗a4+ ♔e7
72 ♗b3 ♗b1

Now the a4 deflecting threat is enabled. Now, white is really out of moves.

73 ♖h3

Another try was 73 ♖f1 a4 74 ♗c4 ♗d3! 75 ♗×c3 a2, but that does not work, either.

73 ... ♗e4
74 ♖h1 ♘×e5

Picks up a pawn. White cannot give the exchange back: 75 f×e5 ♗×h1 76 ♔×d2 a4 77 ♗a2 ♗f3 78 c4 ♗×h5 79 ♔c3 ♗×g6 80 c5 ♗e4 81 ♗c4 h5 and white cannot stop both a and h-pawns.

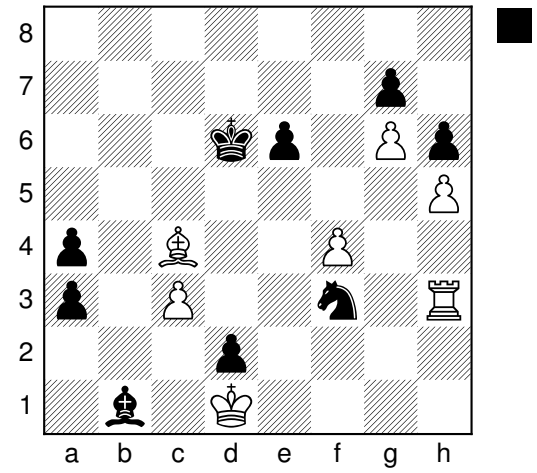
75 ♖f1 a4
76 ♗a2

76 f×e5 a×b3 with connected unstoppable passers for black.

76 ... ♘f3
77 ♖h1 ♗d3
78 ♖h3 ♗f5
79 ♖h1

The knight cannot be taken due to skewer. 79 ♖×f3 ♗g4 80 ♔e2 ♗×f3+ 81 ♔×d2 and black picks up white's h5 and g6 pawns.

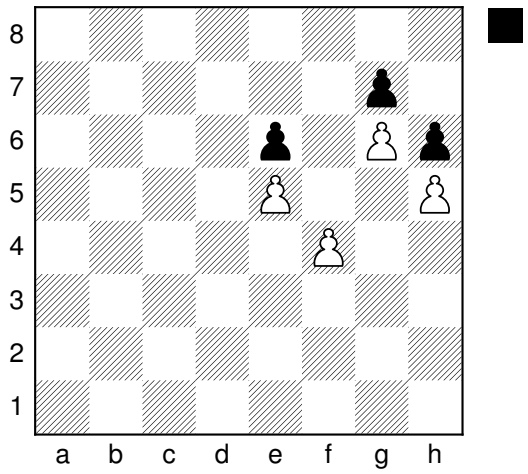
79 ... ♔d6
80 ♗c4 ♗b1
81 ♖h3



0-1. Black wins by adjudication.

A possible continuation: 81...♗d3 82 ♗a2 ♗e2+ 83 ♔×e2 ♘g1+ 84 ♔×d2 ♘×h3 85 ♔e3 e5 86 f5 ♘f4 87 f6 ♘×h5 88 f7 ♔e7 89 ♔e4 ♘f4 90 ♔×e5 ♘d3+ 91 ♔e4 ♘c1 92 ♗b1 a2 93 ♗×a2 ♘×a2 94 ♔d3 ♘c1+ 95 ♔d2 ♘b3+ 96 ♔c2 h5. White king cannot stop both a and h-pawns.

Appendix



When evaluating transitions to endings, it is often useful to analyze specific pawn structures on the board and whether they're winning or not given the remaining pieces.

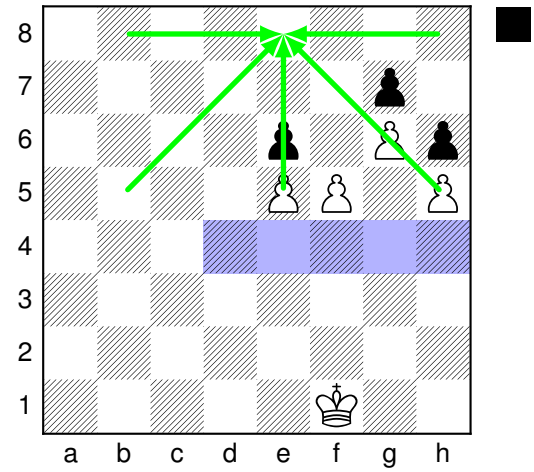
The pawn structure in the figure is winning for white, unless there is a black piece to stop the queening. The plan for white is to play f5, and then:

(a) if black takes, push the e-pawn. Full variation: 1. f5 e×f5 2. e6 f4 and the e-pawn runs.

(b) if black doesn't take, push the f-pawn again. Full variation: 1. f5 and 2. f6 g×f6 3. g7 and the g-pawn queens on the next move.

(c) if black still doesn't take, take the g-pawn with the f-pawn. Full variation: 1. f5 and 2. f6 and 3. f×g7 and the g-pawn queens on the next move.

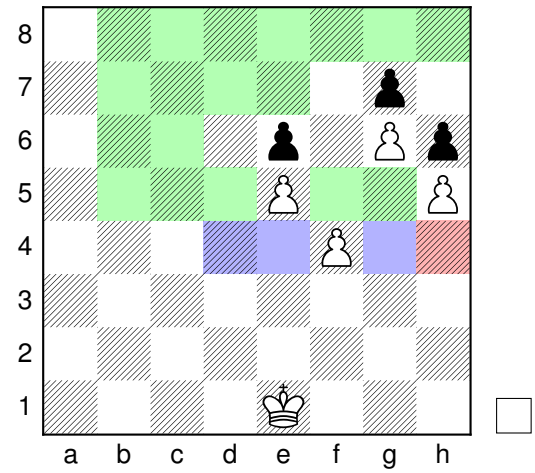
Now, when considering a king-pawn ending with this structure, it is quite straightforward to determine the area where the black king has to be in order to stop the queening, provided white king is far away. Consider that 1. f5 has been played.



Plan (a) works for black, as long as the king is somewhere along the green arrows and has a path for the pawn when white makes the move. When so, the king can still catch the pawn after 1... e×f5.

For plans (b) and (c) to work for black, the king has to be able to catch the breaking pawn. Thus, black king can be in any of the blue squares after 1. f5 and still catch the queener, provided there is a clear path.

Combining, since black can choose the plan, the king has to be one of the green or blue squares to prevent queening when it is white to move:



The only square for the king where the path becomes a problem is h4. Consider 1. f5 ♔×h5 2.

f×e6 ♔×g6 and now the doubled pawns prevent the black king from intercepting. On the other hand, the white pawns cannot advance, either.