

WCCI 2018-2021, section H (retro)

Andrew Buchanan

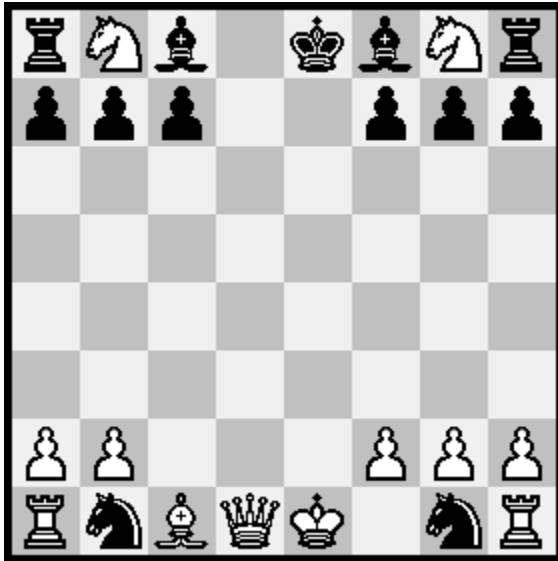
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No. 1

Andrew Buchanan

ded. to Richard & Gertrude Dunn

R576 The Problemist Jul-2021



(12+13) PG in 10.0

C+ Popeye v4.87

Solution

1.Sf3 Sc6 2.Se5 Sd4 3.Sxd7 Sxe2 4.Sb8 Sg1 5.Bd3 Qxd3
6.c3 Qxc3 7.Sxc3 Sf6 8.Sd5 Se4 9.Sxe7 Sxd2 10.Sg8 Sb1

- Double W/B knight platzwechsel – described as “Future Proof Game IN(Ss,Ss)”
- Home-and-away-base
- New economy record holder in its Future Proof Game class, even though it **also** has the home-and-away-base feature.

Prior Art

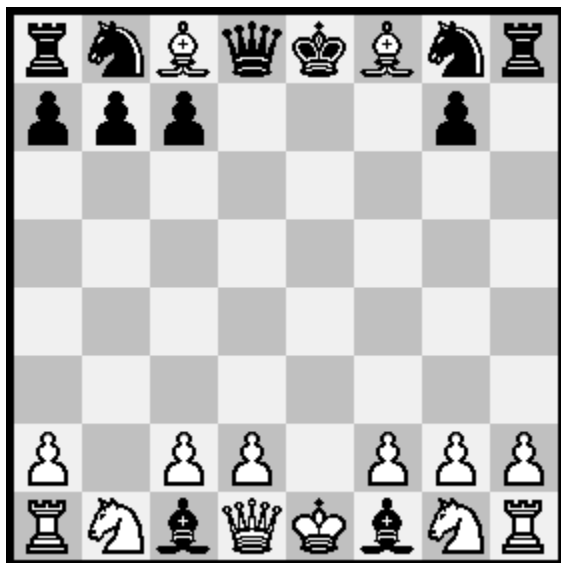
WinChloe reports 13 prior PGs showing the Belfort pattern, but almost all have pieces littering the no-man’s land. The one exception (Dupont v Perruchaud France- Échecs 2003 PG in 10.5) has no platzwechsel – three knights are promoted, one original.

No. 2

Andrew Buchanan

ded. to Richard & Gertrude Dunn

R575 The Problemist Jul-2021



(14+12) PG in 9.5

C+ Jacobi v0.7.5 with constraints.

Solution

1.b4 e5 2.b5! Ba3 3.Bb2 d6 4.Bxe5 Bg4 5.Bxd6 Bxe2
6.Bf8 Bxb5 7.Bd3 Bc1 8.Bxh7 f5 9.Bxf5 Bf1 10.Bc8

- Double W/B bishop platzwechsel – described as “Future Proof Game IN(Bb,Bb)”
- Home-and-away-base
- Very unexpected W2 move
- Feedback from solvers is that this was hard to solve.

Prior Art

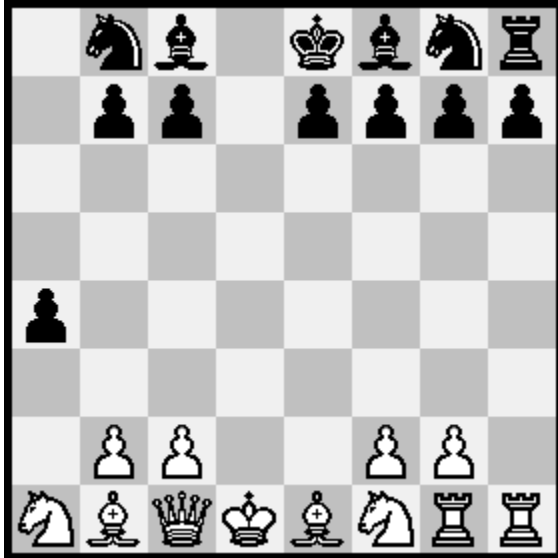
WinChloe reports 21 prior PGs with showing the Belfort pattern, but all have pieces littering the no-man’s land. A couple of shorter PGs for Future Proof Game category use blocking pawns to eliminate transposition duals (e.g. Christiaans & Boumeester, Probleemblad 1993). The new problem uses innovative asymmetric sequencing of bishop moves to avoid the need for transposition dual removal.

No. 3

Andrew Buchanan

after Cedric Lytton

StrateGems Oct-2021



(12+13) PG in 16.5

HC+ Jacobi v0.7.5 using constraints.

Solution

1.Sf3 d5 2.Rg1 d4 3.Sxd4 a5 4.Sb3 Qxd2+ 5.Bxd2 Ra6 6.Qc1 Re6 7.Kd1 Rxe2 8.Be1 Re4 9.S1d2 Ra4 10.Bc4 Rxa2 11.Sf1 Ra4 12.Ra3 Rb4! 13.Sa1 a4 14.Ba2 Rh4 15.Bb1 Rxh2 16.Rh3 Rh1 17.Rhxh1

- Task is “cyclic shift register” of 8 officers (= 1 byte!): this translates to RRS, KQB & BS cyclic platzwechsels.
- Very surprising quiet B12 move is the breakthrough.
- Absence of clutter as usual makes this a challenge to verify.

Prior Art

Startling artistic improvement on Cedric Lytton *The Problemist* 2004(v) (dedicated to C.Frankiss) 169680 in WinChloe. 1.0 move shorter, and with a much cleaner diagram: no blocking units in the diagram means (as with Nos. 1&2 above) thematic actors must choreograph their own dual elimination in now empty space. The original author was happy to say that this is “AB after CL”.

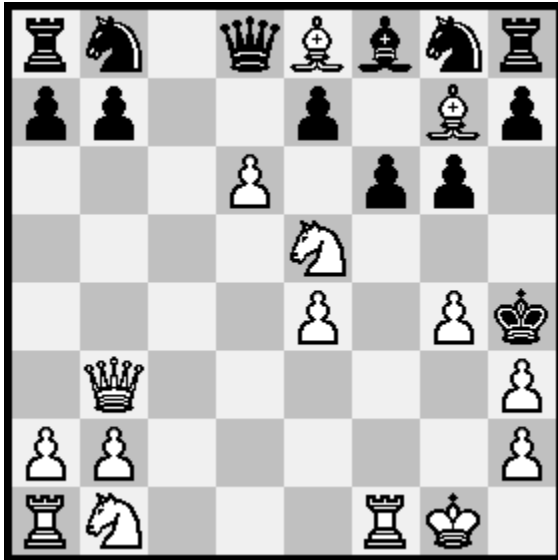
Human-Computer Verification

Missing bQ means many degrees of freedom, and raw Natch cannot hope to solve. So Jacobi constraints together with connective retro-logic were used to solve & validate.

No. 4

Andrew Buchanan

10 Problemas Oct-2021



(15+13) PG in 14.5

HC+ Jacobi v0.7.5 using constraints.

Solution

1.e4 c5 2.Bb5 c4 3.Sf3 c3 4.0-0 cxd2 5.c4 f6 6.Qb3 d1=B 7.Bh6 Kf7 8.c5+ d5
9.cxd6ep+ Kg6 10.Se5+ Kh5 11.Be8+ g6 12.Bg7! Bh3 13.gxh3 Bg4 14.f3 Kh4 15.fxg4.

- Valladao in 8.5 moves, equalling the prior record (Minerva).
- Then 6.0 moves re-establish control and show Prenix & Ceriani-Frolkin
- The motivation of W12 is hard to discern, but this is the most important trick.

Prior Art

Hitherto, the shortest Valladao PG is Enzo Minerva 2005 (WinChloe 2005). However my Problemas article includes 6(!) Valladao PGs in 8.0, using a superior matrix.

Theoretical Innovation

“Sprint” is defined as the first segment of a record PG, achieving the task in minimal time. It’s followed by “Wind-down” (the winner’s jog round the stadium waving at the crowd) where artistic effects can be shown. This balances economy against artistry.

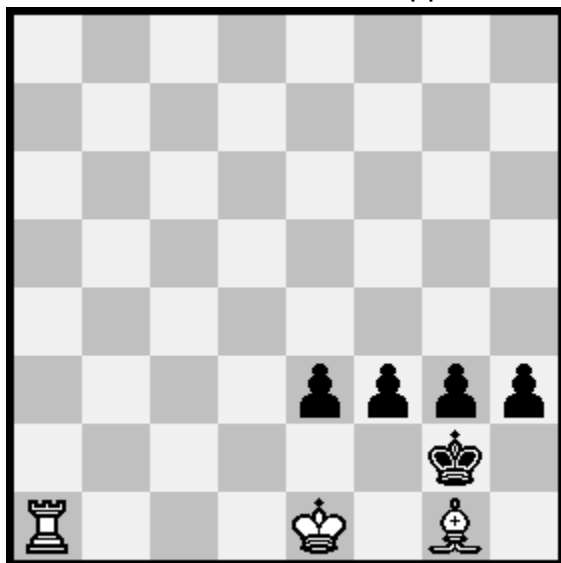
This problem is one of three new matrices which sprint to Valladao in 8.5 like Minerva, but then have extended wind-downs. It is technically difficult to control the position after the ep, and W12 is a trick preventing transposition duals that would otherwise bust the problem. After control is restored, Prenix & Ceriani-Frolkin effects are easy.

No. 5

Andrew Buchanan

dedicated to K.Çefle & O.Heimo

AA011 24-Dec-2021 The Hopper



(3+5) Position after Black's 5,207th move.

h#2.5. 2 solutions.

HC+ Popeye v4.87

Solutions

1. ... Kd1 2. Kf1 Bxe3 3. g2 Kd2#

1. ... Bxe3 2. Kh2 Kd2 (0-0-0?) 3. g2 Bf4#

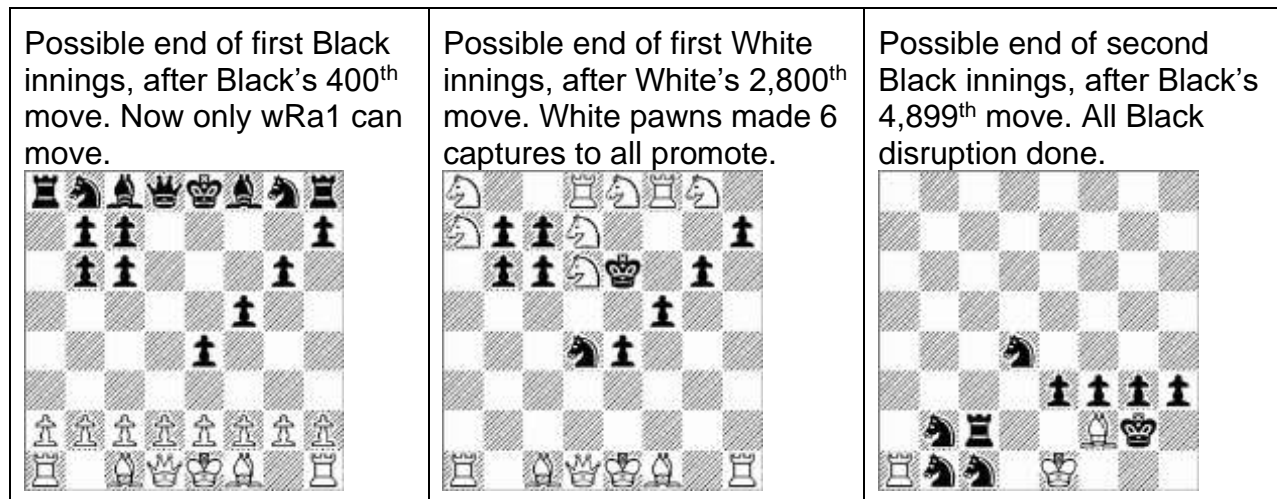
But can we prove that castling is illegal?

Retro Logic

Can White have retained queenside castling right? Let us suppose yes. There were 24 captures and up to 88 pawn moves. One pawn capture per file is necessary and sufficient. This means there were up to 104 disruptive moves, and to reach the absurd total number of moves, we need all of them.

Each disruptive move comes at the end of a sequence of up to 50 moves - *except* that there are three points where "innings" change: the other player takes over as disruptor. At the handover, the new disruption comes at most 49.5 moves after the previous one. Each change of innings costs 0.5 of a move. The total number of moves has been selected so we can cut no corners. We need the number of innings to be minimal.

A minimum of four innings are required: first Black makes disruptive moves, the White then Black and finally White. So 1.5 moves only are lost in the changes. Here are examples of positions for the end of the innings:



The final disruptive move at the end of White's second innings must be 4,899. Bxf7 or Bxh7. There can now be at most 7.5 moves to reach the diagram position.

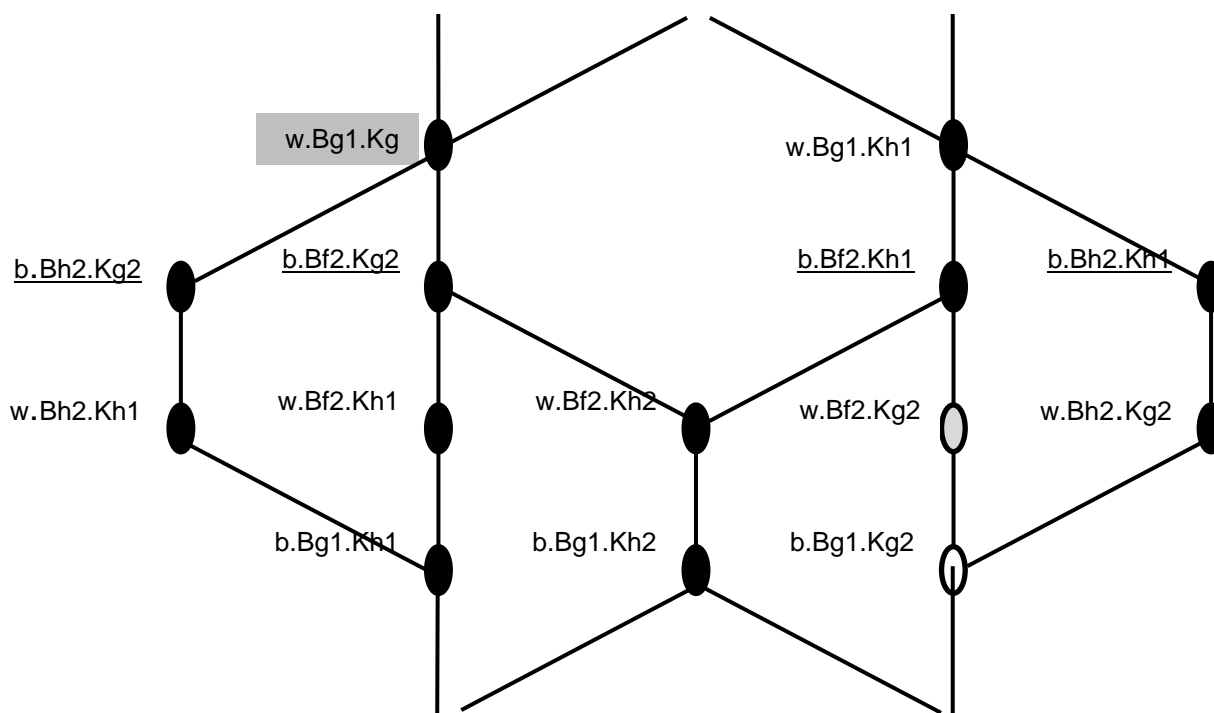


Fig 1: Position graph for 5,207 problem

- Each move is down (vertically or diagonally).
- When reach the bottom, go to the top (i.e. horizontal cylinder).
- String is next player to move + wB location + bK location.
- The diagram position is shown highlighted: w.Bg1.Kg2.
- The possible positions after the last disruptive move are in the row below, underlined.

The directed graph is a 4-partite cycle. There are only 2 positions in the smallest partition, which happens to contain the target position, so there can be at most 7.5 moves from the last disruptive move to the diagram position. The last disruptive move resulted in b.(Bh2/Bf2).(Bg2.Bf1). Since whichever of these 4 positions we start at is Black to move, this aligns well with the efficient 4-inning sequence earlier.

Hence with $5,200 - 1.5 + 7.5 = 5,206$ Black moves, White queenside castling can be legal. However we are told Black has just made their 5,207th move, so White castling rights must have been lost earlier, and there are 2 clean solutions to the h#2.5

- Detailed strategies needed for emptying the board, with sensitivity to exact values for passing the initiative from one player to another.
- Non-trivial avoidance of 3Rep in the retro endgame.
- Interesting, harmonious helpmate pair at the End of Time, after the stars have all winked out.

Prior Art

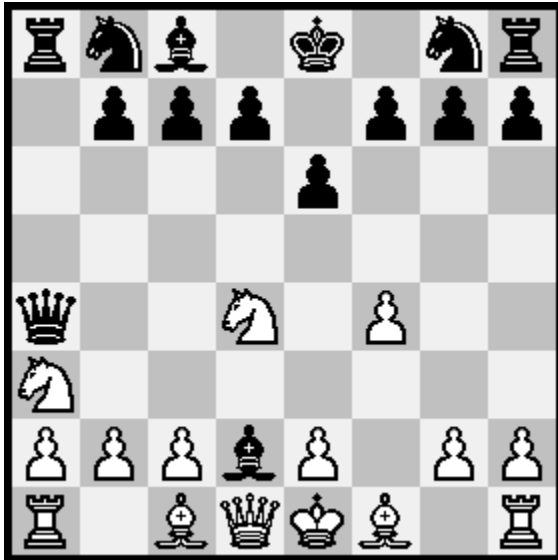
Cefle (Phenix, 1998 in WinChloe as 71271) suggests a position after Black's 516th move. However it's very tame, and by progressively enriching the retro & forward play, I have reached 5207. If anyone manages to make a composition with both 50M & 3Rep that requires a *larger* value than 5,207, I am very keen to hear of it.

(Apologies for length of this entry, but there's a lot to show.)

No. 6

Andrew Buchanan

AA009 24-Dec-2021 The Hopper



(15+15) Drawn game. PG in 12.0
C+ Jacobi v0.7.5 with constraints

Solution

1. Sf3 a5 2. Rg1 a4 3. Rh1 a3 4. Sxa3 d6 5. Rb1 Qh4 6. Ra1 Qa4 7. Sd4 Bb4 8. f4
Bxd2+ 9. Kf2 Be3+ 10. Ke1 Bd2+ 11. Kf2 Be3+ 12. Ke1 Bd2+= draw by 3Rep

Retro Logic

It looks like castling rights are only lost by W9, as wK cannot have moved before. However, if *both* white rooks have previously moved, then no castling rights are lost. Out of the millions of candidate proof games, only one allows for White to have lost castling rights: first kingside, then queenside.

- Double switchback RR (separate from the Kb repetition double switchback)
- Castling rights loss
- Humour and surprise in the idea.

Prior Art

In Probleemblad 2002, I made (101863 WinChloe) which is Drawn game, PG in 7.0. Here the task is to ensure that the wK has already moved before the first thematic check. It took 20 years for the penny to drop that I might be able to do the same thing, but shift the rooks instead...