



# THE PUZZLING SIDE OF CHESS

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## DEAD RECKONING

number 127

November 26, 2016

*Dead reckoning* is a method of navigation in which we estimate our current position based on the course, speed, and time since the last known position.



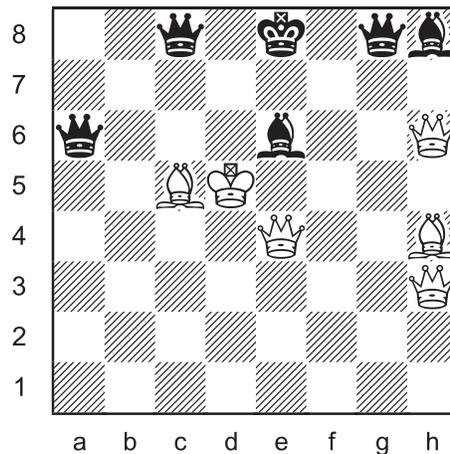
In the world of chess composition, *dead reckoning* has another meaning. It is a technique used in retrograde analysis which determines previous moves based on “dead positions”.

A position is dead if there is no possibility of checkmate for either side, even if one side is playing the worst moves imaginable.

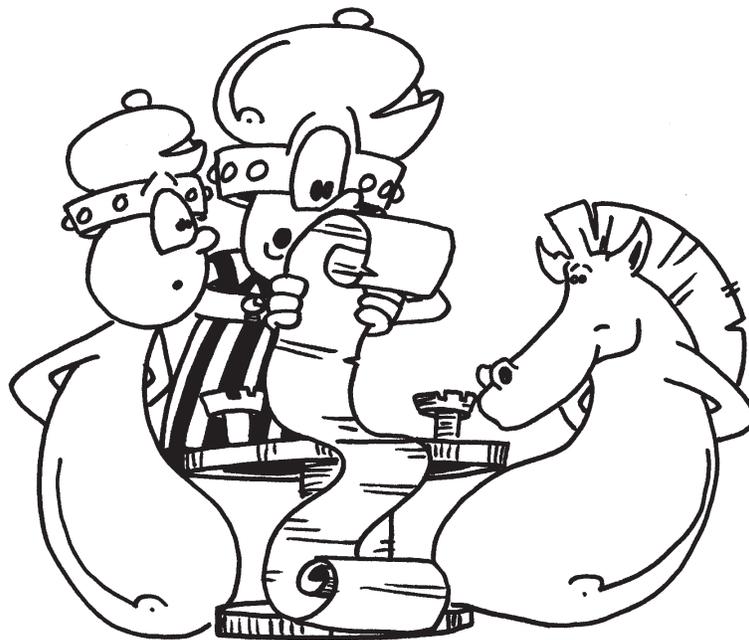
The basis of dead reckoning, DR for short, is FIDE rule 5.2b. “*The game is drawn when a position has arisen in which neither player can checkmate the opponent's king by any series of legal moves.*” This situation immediately ends the game.

Before getting to the puzzles, let's consider two examples.

### Best Move?



What is White's best move?



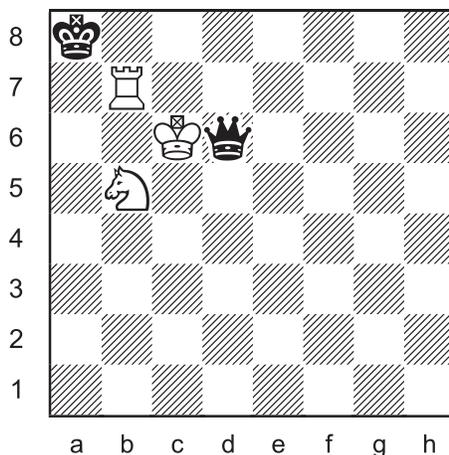
*Checking the rulebook.*

Sorry, folks, that was a trick question. The game is over. The position is dead. There is no best move because no further moves can be made.

The three "candidates" were  $1.Qe4xe6+$ ,  $1.Qh6xe6+$ , and  $1.Qh3xe6+$ . To each of those moves, Black would have three replies, but regardless of what is "played", the forced sequence of captures would eventually lead to a position with king and two dark-square bishops vs. king and dark-square bishop. Dead as dead can be.

Not all dead positions involve a lack of mating material. They also include forced stalemates and permanently blocked pawn formations. The diagram below combines two forms of chessboard death.

### Dead or Alive?

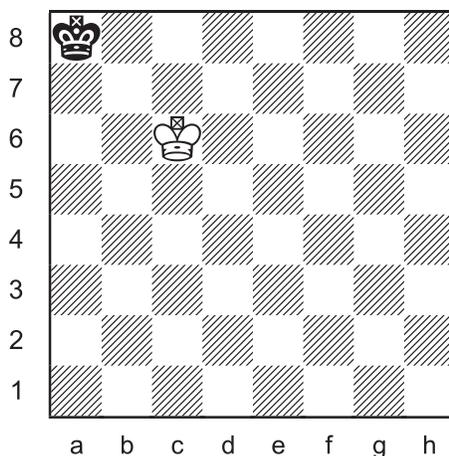


It seems that the black queen must be captured, but 1.Nxd6 is stalemate and 1.Kxd6 forces 1...Kxb7, with no mating material. So the position is drawn as it stands. The queen cannot be taken!

The invention, development, and promotion of DR problems is due primarily to one man, British retro specialist Andrew Buchanan. He once referred to dead reckoning as “an off-the-wall idea”. But the idea has steadily grown into a distinct sub-category of retrograde problems, with over 70 published compositions by numerous authors.

Here is the puzzle that he uses to explain dead reckoning.

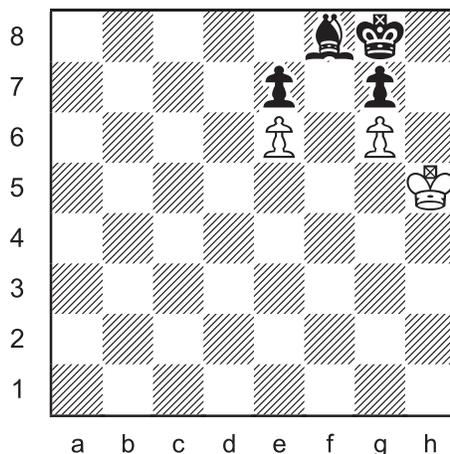
### Retro 36



Which king made the last move?

Now we're ready for some serious retro fun. The next three problems are all by Andrew Buchanan. We start with two of his earliest DR compositions from 2001. They're twins, featuring a blocked pawn formation.

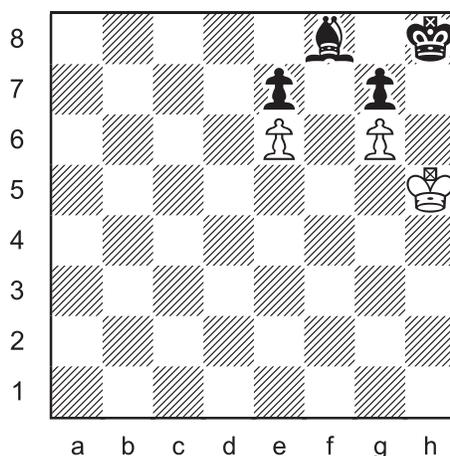
### Retro 37



White to play.  
What was the last move?

Here's the same position except the black king is on h8.

### Retro 38



White to play.  
What was the last move?

*Dead Reckoning*, the 1947 film noir, starred Humphrey Bogart and Lisabeth Scott. A twisted tale of love and death.

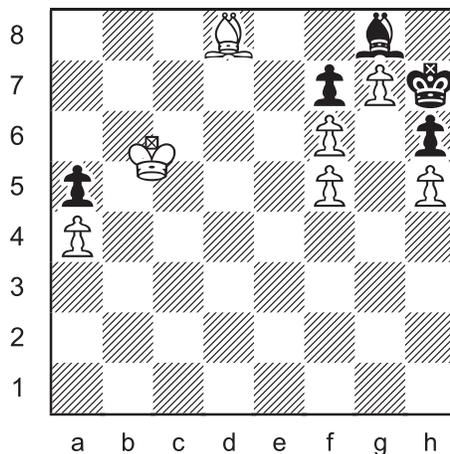


*Hollywood 1947, on the set of Dead Reckoning.  
Bogart was a strong and avid chess player throughout his life.*

This puzzle is a Buchanan original, made especially for *The Puzzling Side of Chess*. Thanks, Andrew!

The white king needs to be adjusted. But which square is he on?

### J'adouber

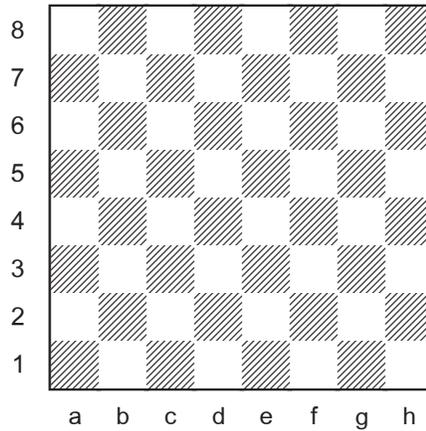


White to play.  
Where is the white king?  
Does he stand on b5, b6, c5, or c6?

We finish off with a problem from column 116. Same construction task, but a new and improved solution. What is the most pieces on the board so that mate is impossible?

### **Construction Task 11**

Impossible Mate Maximizer



Construct a position, using the maximum number of pieces, so that neither player can possibly checkmate the other, even with the help of bad moves by the opponent. The position may not be a forced stalemate. At least one player must have the option to “play on”, so to speak.

The position must be legal, which means “reachable in an actual game”.



*Red Deckoning*

## SOLUTIONS

**PDF hyperlinks.** You can advance to the solution of any puzzle by clicking on the underlined title above the diagram. To return to the puzzle, click on the title above the solution diagram.

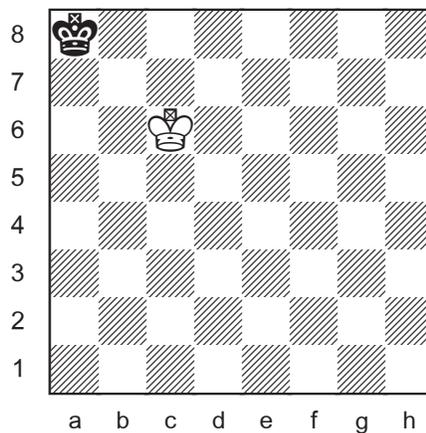
**Archives.** Other columns with similar problems can be found in the Puzzling Side archives.

Solutions to **Best Move** and **Dead or Alive** are given in the main text.

### **Retro 36**

Andrew Buchanan 2001

*The Problemist*



The last move was by the white king: **1.Kxc6**.  
The captured black piece was a queen, rook, or pawn.

Consider the previous position if Black just moved from a7 or b8.

- Black did not play the non-captures 1...Ka7-a8 or 1...Kb8-a8 because the position would already be dead with king vs. king.
- Black did not capture a knight or bishop on a8 because the position would already be dead with king & one minor piece vs. king.
- Black did not capture a queen or rook on a8 because the only move, the only way out of check, would be to capture on a8. So the position would already be dead before the capture.

Therefore Black did not make the last move.

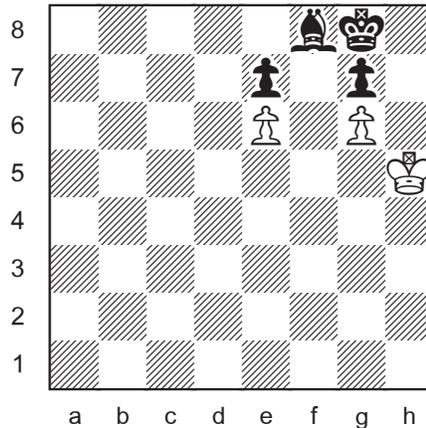
White did not play the non-capture 1.Kc6 and did not capture a minor piece on c6 because the previous position would be dead.

With a black queen, rook, or pawn on c6, the position was still alive because White need not capture.

## Retro 37

Andrew Buchanan 2001

*Retro mailing list*



The last move was **1...Kh7xg8(N)**.

The captured white piece was a knight.

The position is dead. The pawn formation is indestructibly blocked. White can manoeuvre to capture the bishop on f8, but that results in stalemate.

Obviously, the last move was by the black king. He did not move from f7 because he would have been in an impossible double check. So he either moved from h8 or h7.

The last move was not the non-capture 1...Kh8-g8 because the position would already be dead.

The last move was not 1...Kh8xg8 because the position would be dead with any white piece on g8. Capturing the piece would be Black's only move. But the game is over before the capture. That's the rule!

So the black king had to move from h7. White's previous move was 1.f5xg6+ or 1.g5-g6+.

The last move was not the non-capture 1...Kh7-g8 because the position would already be dead.

The last move was not 1...Kh7xg8(B/Q) because the king would have been in an impossible double check.

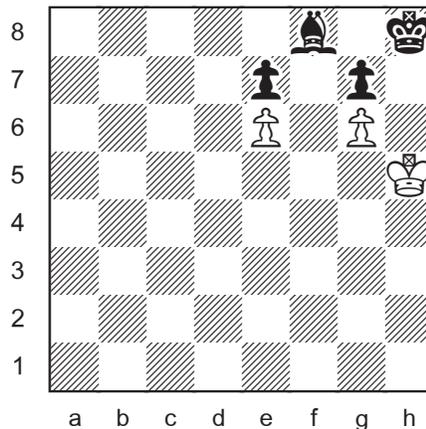
The last move was not 1...Kh7xg8(R) because the position would already be dead. Capturing the rook would be Black's only move.

The last move had to be 1...Kh7xg8(N). The position was still alive before this move because Black had the option of 1...Kh7-h8.

## Retro 38

Andrew Buchanan 2001

*Retro mailing list*



The last move was **1...Kh7xh8(B)**.

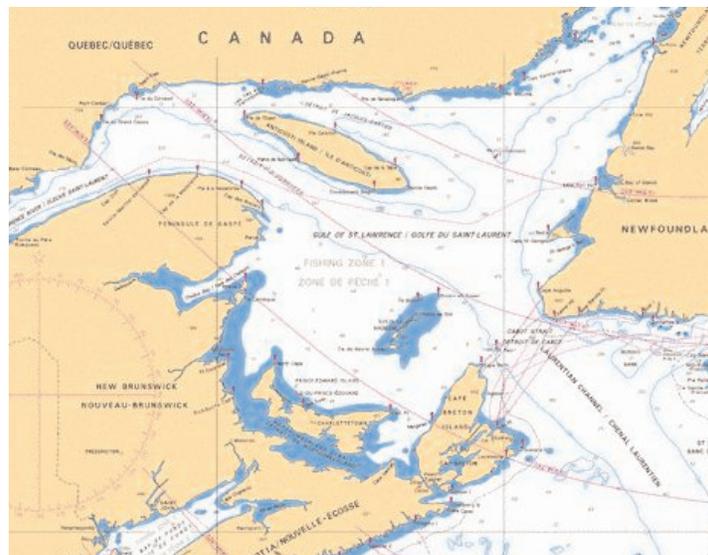
The captured white piece was a bishop.

Most of the analysis for this twin position is the same as retro 37.

The last move was not 1...Kg8-h8 or 1...Kg8xh8 because the position would already be dead. As before, the black king must have captured on h8 from h7. He did not capture a queen or rook because he would have been in an impossible double check.

The last move was not 1...Kh7xh8(N) because, surprisingly, the position is dead with a white knight on h8. Black is not forced to take it and could play 1...Kh7-g8 instead. But the white knight cannot escape before its capture next turn. 2.Nf7 is stalemate.

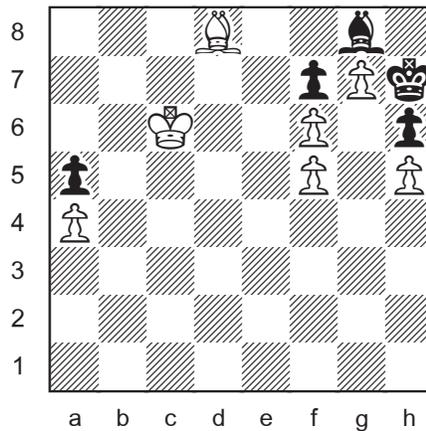
So the last move was 1...Kh7xh8(B). The position was still alive before this move because Black had the option of 1...Kh7-g8.



## J'adouber

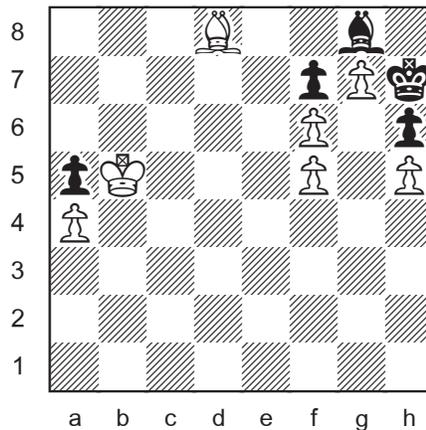
Andrew Buchanan 2016

*Puzzling Side of Chess*



The white king must be on c6.

The position will be dead regardless of how we adjust the white king. There is no way for White to release the stalemate. But the positions are illegal with the king on b5, b6, or c5.



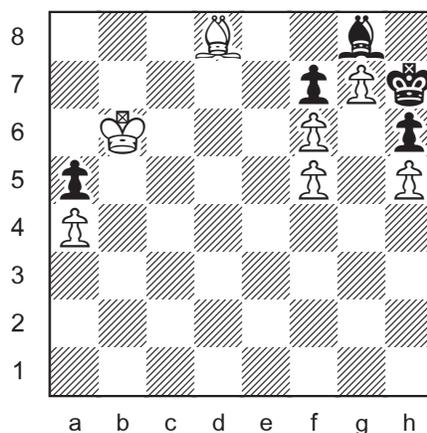
White king on b5.

The last move was not  $1...Kh8>h7$  because that move would be forced and the position would already be dead. This applies to all four possible squares for the white king. (The symbol  $>$  means that the move may or may not have been a capture.)

Similarly, the last move was not  $1...b6xa5$  because that move would be forced, meaning of course that the position was already dead.

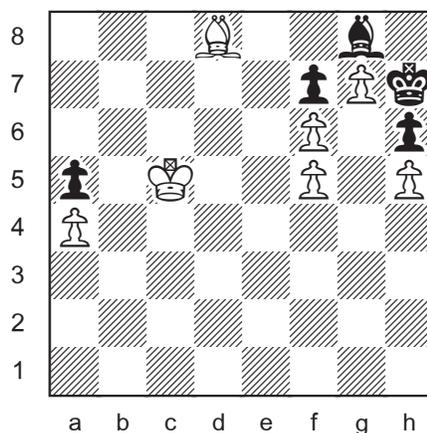
Showing that the last move was not  $1...a7-a5$  is trickier since Black would have the option of  $1...a7-a6+$ . But the position is also dead with the black pawn on a6 because White cannot avoid the inevitable stalemate.

Therefore, Black had no last move, and the position is illegal.



White king on b6.

The last move was not 1...a6-a5 because that move would have been forced, and the position was already dead. Therefore, Black had no last move, and the position is illegal.



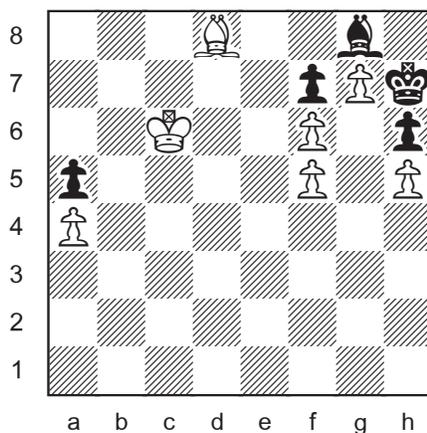
White king on c5.

The last move was not 1...b6xa5 because the white king would have been in check from the pawn on b6.

The last move was not 1...a6-a5 because that move would have been forced, and the position was already dead.

The last move was not 1...a7-a5, even though Black would have the option of 1...a7-a6. The position with the black pawn on a6 is also dead because there is no way to avoid stalemate.

Therefore, Black had no last move, and the position is illegal.



White king on c6.

The last move was not 1...a6-a5 because the position would already have been dead.

But there are two last moves by Black which make the position legal with the king on c6. **1...b6xa5** or **1...a7-a5**.

If Black played 1...b6xa5, there was the option of keeping the position alive with 1...b6-b5.

If Black played 1...a7-a5, there was the option of 1...a7-a6 when stalemate can be circumvented by 2.Be7 a5 3.Bb4 axb4.

“J’adoube.”



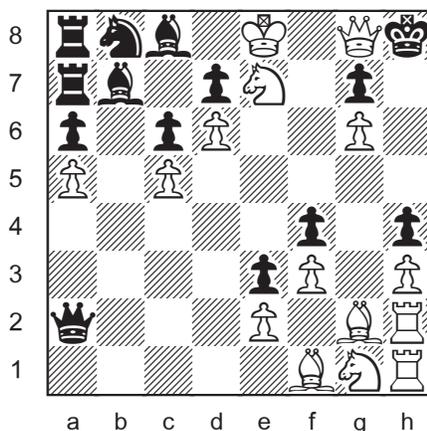
*Lisabeth and Bogie, smoke and games*

## Construction Task 11

### Impossible Mate Maximizer

J. Coakley 2016

*Puzzling Side of Chess*



29 pieces

Checkmate is impossible.

last move: 1.Q>g8+ (game drawn at this point)

After the forced sequence 1...Qxg8+ 2.Nxg8 Kxg8, White has a choice between stalemating with 3.Ke7 Kh8 4.Kf8 or “playing on” in a totally blocked position by 3.Kd8.

Following 3.Kd8, Black can stalemate with 3...Kf8 4.Kc7 Ke8 5.Kb6 Kd8 or “play on” by avoiding ...Kd8.

This position is a new record for the task. The old mark of 28 pieces by Geir Sune Tallaksen Østmoe is given in column 116.

[April 2018: See column 145 for the new record by Andrew Buchanan, 30 pieces.]

For another maximum record that involves dead reckoning, see “The Longest Possible Game” in column 100. 8848 moves.



Until next time!

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