PROBLEM OF THE WEEK #8 – JANUARY 27, 2021

This week, we'll cover a slightly different topic, but one that's fairly important, as you face it very frequently in the play of the game. Specifically, the problem positions all involve races where contact has been broken. The leader in the race (as determined by the respective pip-counts) will generally be the favorite.

The two important questions that we'll explore:

- When should the leader in the race offer a double?
- If doubled, when can the trailer in the race venture a take?

For each of the positions below, Black is on roll and is leading in what is basically a pure race (while there is some possible contact in Position 8E, it is safe to say that neither player will voluntarily leave a shot, and both players will have no difficulty clearing their respective midpoints, so for all practical purposes that position should also be evaluated just like the others – as a non-contact racing position).

Question 1: Should Black double?

Question 2: If Black doubles, should White take the cube?

Note that each position below includes the respective pip-counts for the players to the right of the diagram.

SOLUTIONS

The good news is that there is a relatively straightforward approach for determining when to double in non-contact racing positions of medium to long length (*i.e.,* where the leader's pip-count is 65 or greater).[1]

You simply compare the leader's and the trailer's respective pip-counts, and determine the percentage by which the leader is ahead. You then apply the following simple rules:

- If the player on roll has a lead in the race of 8% or greater, he can offer an initial double.
- If the player on roll has a lead in the race of 9% or greater, he can offer a redouble.
- If the opponent facing a double trails in the race by 12% or less, he can take a double (or redouble).
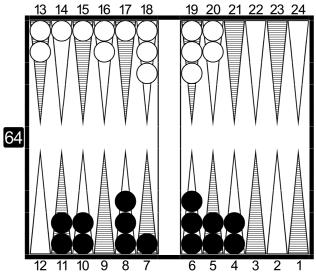
That's all there is to it. The rule isn't perfect, and may not arrive at the correct cube action in all cases, but when it gets things wrong it will generally be very close to the mark, and you won't go far astray by employing this approach. In fact, if you weren't using an approach like this, you're handling of the cube in these types of positions should improve dramatically by incorporating these rules into your game.

Now, let's apply these rules to the Problem Positions.

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[1] Rosenblum, Ed, **Conquering Backgammon**, Thomson-Shore, 2nd Ed., 2019, p. 50. For some further examples of the application of this rule, see Robertie, Bill, **501 Essential Backgammon Problems**, Cardoza Publishing, 3rd Ed., 2017, pp. 347-353, Problems 460-465. For a more in-depth discussion and analysis of doubling formulae in non-contact racing positions (*e.g.,* "Rule 62"), see Trice, Walter, **Backgammon Boot Camp**, The Fortuitous Press, 2004, "Cubes and Races," pp. 111-146, and Olsen, Marc, **Cube Like a Boss**, 2019, Chapter 3: "Race and Bear Off," pp. 56-93. For a "scholarly" and extensive technical discussion of doubling decisions in non-contact racing positions, see Chabot, Michelin, "**Money Cube Action in Low-Wastage Positions,**" November 2014 (https://bkgm.com/articles/Chabot/MoneyCubeAction/MoneyCubeAction1.pdf).

○ is Player 2

score: 0
pip: 120

Unlimited Game
Jacoby Beaver

pip: 109
score: 0

● is Player 1

XGID=----BBCAC-BB-baabaccb-----:0:0:1:00:0:0:3:0:10

● on roll, cube action?

Analyzed in Rollout	No double	Double/Take
Player Winning Chances:	75.60% (G:0.01% B:0.00%)	75.68% (G:0.00% B:0.00%)
Opponent Winning Chances:	24.40% (G:0.00% B:0.00%)	24.32% (G:0.00% B:0.00%)
Cubeless Equities	+0.512	+1.027
Cubeful Equities		
No double:	+0.811 (-0.056)	±0.003 (+0.808..+0.814)
Double/Take:	+0.867	±0.004 (+0.863..+0.871)
Double/Pass:	+1.000 (+0.133)	

Best Cube action: Double / Take

Rollout details		
1296 Games rolled with Variance Reduction.		
Moves: 3-ply, cube decisions: XG Roller		
Double Decision confidence:		100.0%
Take Decision confidence:		100.0%

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In Position 8A, Black leads in the race by 11 pips, which amounts to a lead of about 10% (11/109). Per the formula, Black has a double and White has a take. The Extreme Gammon rollout confirms that this is the proper cube action.

Solution for Position 8A: Double / Take

POSITION 8B

```
       13 14 15 16 17 18    19 20 21 22 23 24
```


○ is Player 2

score: 0
pip: 92

Unlimited Game
Jacoby Beaver

pip: 81
score: 0

● is Player 1

```
       12 11 10 9  8  7     6  5  4  3  2  1
```

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● on roll, cube action?

Analyzed in Rollout	No double	Double/Take
Player Winning Chances:	78.95% (G:0.00% B:0.00%)	78.92% (G:0.00% B:0.00%)
Opponent Winning Chances:	21.05% (G:0.00% B:0.00%)	21.08% (G:0.00% B:0.00%)
Cubeless Equities	+0.579	+1.157
Cubeful Equities		
No double:	+0.879 (-0.121)	±0.003 (+0.877..+0.882)
Double/Take:	+1.026 (+0.026)	±0.004 (+1.022..+1.030)
Double/Pass:	+1.000	

Best Cube action: Double / Pass

Rollout details	
1296 Games rolled with Variance Reduction.	
Moves: 3-ply, cube decisions: XG Roller	
Double Decision confidence:	100.0%
Take Decision confidence:	100.0%
Duration: 1 minute 00 second	

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In Position 8B, Black again leads in the race by 11 pips. In this case, though, he has a 13% (11/81) lead, which is greater than 12%, so White now has a pass. The Extreme Gammon rollout confirms that this is the proper cube action.

Solution for Position 8B: Double / Pass

POSITION 8C

	13 14 15 16 17 18	19 20 21 22 23 24	

○ is Player 2

score: 0
pip: 124

Unlimited Game
Jacoby Beaver

pip: 116
score: 0

● is Player 1

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● on roll, cube action?

Analyzed in Rollout	No double	Double/Take
Player Winning Chances:	70.65% (G:0.01% B:0.00%)	70.62% (G:0.01% B:0.00%)
Opponent Winning Chances:	29.35% (G:0.00% B:0.00%)	29.38% (G:0.00% B:0.00%)
Cubeless Equities	+0.413	+0.825
Cubeful Equities		
No double:	+0.647	±0.004 (+0.643..+0.651)
Double/Take:	+0.621 (-0.026)	±0.005 (+0.616..+0.625)
Double/Pass:	+1.000 (+0.353)	

Best Cube action: No double / Take

Rollout details	
1296 Games rolled with Variance Reduction.	
Moves: 3-ply, cube decisions: XG Roller	
Double Decision confidence:	100.0%
Take Decision confidence:	100.0%
Duration: 7 minutes 59 seconds	

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In Position 8C, Black leads in the race by 8 pips, which amounts to a lead of less than 7% (8/116). Per the formula, Black does not have a large enough lead to justify a double. White, of course, has an easy take in the event that Black mistakenly elects to double (and he wins almost 30% of the time). The Extreme Gammon rollout confirms that this is the proper cube action.

Solution for Position 8C: No Double / Take

○ is Player 2

score: 0
pip: 76

Unlimited Game
Jacoby Beaver

pip: 70
score: 0

● is Player 1

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● on roll, cube action?

Analyzed in Rollout	No double	Double/Take
Player Winning Chances:	72.35% (G:0.00% B:0.00%)	72.31% (G:0.00% B:0.00%)
Opponent Winning Chances:	27.65% (G:0.00% B:0.00%)	27.69% (G:0.00% B:0.00%)
Cubeless Equities	+0.447	+0.892
Cubeful Equities		
No double:	+0.700 (-0.025)	±0.003 (+0.697..+0.703)
Double/Take:	+0.725	±0.004 (+0.721..+0.729)
Double/Pass:	+1.000 (+0.275)	

Best Cube action: Double / Take

Rollout details

1296 Games rolled with Variance Reduction.
Moves: 3-ply, cube decisions: XG Roller

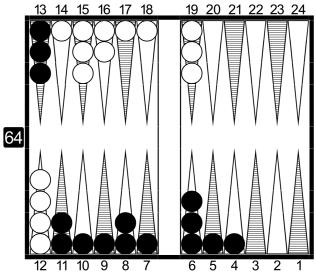|	
Double Decision confidence:	100.0%
Take Decision confidence:	100.0%
Duration: 50.4 seconds	

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In Position 8D, Black leads in the race by 6 pips, which amounts to a lead of about 8-1/2% (6/70). Per the formula, Black has a double and White has a take. The Extreme Gammon rollout confirms that this is the proper cube action.

Note that if Black were holding the cube in this position, he would NOT have a redouble, because he does not lead by 9% or more – a separate Extreme Gammon rollout (not shown) confirms that this is the proper cube action in that circumstance.

Solution for Position 8D: Double / Take

POSITION 8E

13 14 15 16 17 18   19 20 21 22 23 24

64

○ is Player 2

score: 0
pip: 144

Unlimited Game
Jacoby Beaver

pip: 130
score: 0

● is Player 1

12 11 10 9 8 7   6 5 4 3 2 1

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● on roll, cube action?

Analyzed in Rollout	No double	Double/Take
Player Winning Chances:	77.45% (G:0.10% B:0.00%)	77.44% (G:0.20% B:0.00%)
Opponent Winning Chances:	22.55% (G:0.01% B:0.00%)	22.56% (G:0.01% B:0.00%)
Cubeless Equities	+0.550	+1.102
Cubeful Equities		
No double:	+0.869 (-0.089)	±0.007 (+0.863..+0.876)
Double/Take:	+0.958	±0.008 (+0.950..+0.966)
Double/Pass:	+1.000 (+0.042)	

Best Cube action: Double / Take

Rollout details	
1296 Games rolled with Variance Reduction.	
Moves: 3-ply, cube decisions: XG Roller	
Double Decision confidence:	100.0%
Take Decision confidence:	100.0%
Duration: 4 minutes 37 seconds	

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In Position 8E, Black leads in the race by 14 pips, which amounts to a lead of about 11% (14/130). Per the formula, Black has a double and White has a take. The Extreme Gammon rollout confirms that this is the proper cube action.

Solution for Position 8E: Double / Take