

## PROBLEM OF THE WEEK #11 – FEBRUARY 24, 2021

### THE POSITION:

64

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

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

XGID=--ACBCC-A-----b--Bba-bdd-:0:0:1:41:6:6:0:7:10

○ is Tuna  
score: 6  
pip: 55

7 point match

pip: 96  
score: 6

● is KellyRae

● to play 41

### THE TOURNAMENT AND THE PLAYERS:

For this week's problem, I've taken another position from one of my matches in our weekly online tournament. This position comes from this Monday's weekly tournament (February 22, 2021). I ("KellyRae") am playing the Black checkers in the main tournament against Mark "Tuna" Moskal, who is playing the White checkers.

### THE GAME SITUATION:

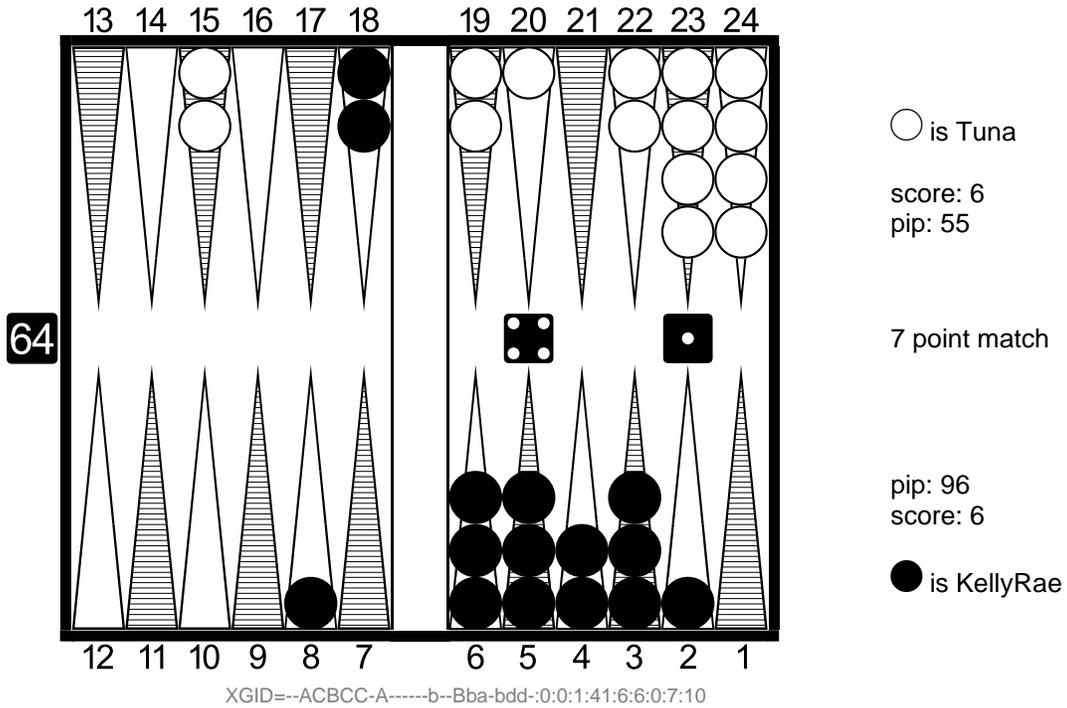
It's the final game of our 7-point match, with the match score being tied, 6-6 – *i.e.*, we are at Double Match Point. It's win or lose and gammons and backgammons don't matter in the slightest. I am in a tough spot here, down in the race by over 40 pips, and not having an ideal amount of contact, with my anchor on the 18-point being the last line of defense to hold off Mark's last two remaining outside checkers, which are stationed on the 15-point, a mere three pips away from my anchor.

### THE QUESTION:

I've just rolled 41. What's my best play?

# SOLUTION

## EXTREME GAMMON ROLLOUT RESULTS



● to play 41

1.	Rollout <sup>1</sup>	18/17 6/2	eq: -0.591
	Player:	20.46% (G:1.43% B:0.06%)	Conf.: ± 0.002 (-0.593...-0.589) - [100.0%]
	Opponent:	79.54% (G:3.79% B:0.00%)	Duration: 17.3 seconds
2.	Rollout <sup>1</sup>	18/17 8/4	eq: -0.617 (-0.026)
	Player:	19.17% (G:1.56% B:0.12%)	Conf.: ± 0.002 (-0.618...-0.615) - [0.0%]
	Opponent:	80.83% (G:3.40% B:0.00%)	Duration: 15.0 seconds
3.	Rollout <sup>1</sup>	18/17 5/1	eq: -0.618 (-0.027)
	Player:	19.09% (G:2.14% B:0.12%)	Conf.: ± 0.002 (-0.620...-0.616) - [0.0%]
	Opponent:	80.91% (G:5.32% B:0.00%)	Duration: 16.5 seconds
4.	Rollout <sup>1</sup>	5/1 3/2	eq: -0.666 (-0.075)
	Player:	16.71% (G:1.02% B:0.02%)	Conf.: ± 0.002 (-0.668...-0.664) - [0.0%]
	Opponent:	83.29% (G:2.00% B:0.00%)	Duration: 8.4 seconds
5. ✓	Rollout <sup>1</sup>	8/7 6/2	eq: -0.666 (-0.075)
	Player:	16.69% (G:0.79% B:0.02%)	Conf.: ± 0.002 (-0.668...-0.664) - [0.0%]
	Opponent:	83.31% (G:1.64% B:0.00%)	Duration: 13.2 seconds
6.	Rollout <sup>1</sup>	8/4 3/2	eq: -0.668 (-0.077)
	Player:	16.60% (G:0.75% B:0.05%)	Conf.: ± 0.002 (-0.670...-0.667) - [0.0%]
	Opponent:	83.40% (G:1.21% B:0.01%)	Duration: 11.4 seconds
7.	Rollout <sup>1</sup>	6/2 3/2	eq: -0.673 (-0.082)
	Player:	16.33% (G:0.85% B:0.01%)	Conf.: ± 0.002 (-0.675...-0.672) - [0.0%]
	Opponent:	83.67% (G:1.64% B:0.00%)	Duration: 9.4 seconds
8.	Rollout <sup>1</sup>	6/2 5/4	eq: -0.675 (-0.084)
	Player:	16.27% (G:0.73% B:0.02%)	Conf.: ± 0.002 (-0.676...-0.673) - [0.0%]
	Opponent:	83.73% (G:1.70% B:0.00%)	Duration: 9.0 seconds

<sup>1</sup> 1296 Games rolled with Variance Reduction.  
Moves: 3-ply, cube decisions: XG Roller

## **ANALYSIS & BEST PLAY**

This week's problem position presents yet another example of a play that I botched rather significantly. In this position, I quickly played 8/7 6/2, completing a five-point board and adding a third builder for the ace-point, all while maintaining my 18-point, which offers my last chance for hitting a game-winning shot. I honestly didn't give the play a second thought – at the time, it seemed to me that it must be clearly best.

Following the match, I analyzed the entire match using the backgammon analysis program, eXtreme Gammon® (a practice I heartily recommend for those players who want to improve their game). The match analysis “dinged” this move as a fairly large error. **THE BEST PLAY, IT SEEMS, IS 18/17 6/2, SPLITTING THE 18-POINT ANCHOR!** In fact, the top three plays all involve making the anchor-splitting play, 18/17. Even after seeing the rollout results, the play just didn't look right to me (I certainly didn't think my play choice could be such a large error). Of course, if White's next roll is 63, 62 or 61, I'll have wished I split the anchor, since then White is forced to either leave a double-direct shot in the outfield or to hit one of my blots, leaving me with a direct 5 to hit, as well as some additional indirect shots at White's remaining blot on the 15-point. This is much better than the single-direct shot that I get after making the play that I did. Against this, though, the anchor-splitting play leaves White with twos and threes to hit my newly created blots, and when he is able to hit, it would seem that most of the time he'll also be able to either cover the blot on the 5-point or otherwise simply lift the blot on the 5-point to safety (and any two, three, four or five will allow him to either cover or lift). When this happens, I'll be left with only indirect shots from the bar, while I'll also need to re-enter the hit checker from the bar against what will be at least a four-point board (a five-point board in those cases where White has rolled one of his hit-and-cover numbers). In addition, White doesn't *have* to hit – he'll only exercise this option if it's a forced play (unlikely) or if it's to his advantage to do so.

My confusion is reflective of the main problem that comes hand-in-hand with using neural nets as a tool for backgammon study and analysis. The bots are only capable of communicating by providing quantitative information and data – equities, match winning percentages, and the like. As compared to a human tutor, they don't offer any helpful qualitative feedback that would give you useful guidance for play or otherwise offer a descriptive rationale in support of the conclusions that they are arriving at. Given these limitations, you will sometimes be left at an impasse, finding yourself lacking a conceptual understanding as to the basis for the bot's play recommendations. Simply put, you'll know *what* the correct move is, but you won't really know *why* it's correct. When this happens, what can you do?

One methodology that I occasionally employ to address a situation like this is to take a survey of all of White's possible rolls, using eXtreme Gammon® as a tool to assist me in this endeavor.<sup>1</sup> In this case, I checked White's best plays for each of his possible rolls against both my selected play, 8/7 6/2, and the bot's recommended play, 18/17 6/2. I also took note of the match winning chances that Black has in each such case, assuming that White makes his best play. I will avoid going into excessive detail here, but for those that are highly inquisitive, suffer from OCD, and/or who are otherwise just plain masochistic, I include an Annex at the end of this Problem Solution which sets forth a chart that outlines the results of this undertaking in great detail. For the rest of you more normal folks, I present the salient findings below:

- Clearing Rolls – With 9 of his rolls (66, 55, 44, 65, 64 and 54), White is able to clear the outfield point. Not surprisingly, in these cases it really doesn't matter which play you make, and your match winning chances range from slim to none either way.
- Rolls Where White Can Elect to Hit-and-Lift – With 4 of his rolls (43 and 42), White can elect to hit one of Black's new blots and then lift his checker on his 5-point by playing 5/1. It turns out, though, that White is better off

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<sup>1</sup> I first saw this approach described in the book, *Modern Backgammon*, by the venerable Bill Robertie, where he refers to this process as being one of “Reading the Numbers.” After noting that the neural networks are at their very strongest in positions which are dominated by immediate tactical considerations, Bill observes, “How do you get a handle on such positions at home? The best way is to list all the opponent's possible replies to each candidate play, see what Snowie would play along with the evaluation, and tabulate them side by side . . . Listed this way, it will turn out that most replies will have negligible differences, but a few replies will represent the entire swing between the two plays.” (pp. 195-196).

adopting a “wait-and-see” approach and playing these rolls entirely in his inner board, rather than hitting-and-lifting. If White hits-and-lifts, Black will get a bunch of indirect shots (nine in the case of 43, twelve in the case of 42). In addition, White will be left with the problem of safetying his newly created blots even when Black misses, which won’t necessarily be easy to do since White has gaps on his 4-point and 5-point.

- Good Rolls for the Anchor-Splitting Play:
  - 63, 62, 61 (6 rolls) – As noted above, when White rolls a six but is unable to clear his outfield point, Black will obviously be quite delighted if he has elected to split his anchor. In these cases, Black’s winning chances increase by between 15% and 25% (in fact, he becomes the favorite in the game).
  - Small doubles, 11, 22 and 33 (3 rolls) – After conducting the “Read the Numbers” analysis, I recognized that these rolls in particular were ones that I didn’t consider strongly enough in developing my initial impression of the problem position.
    - If Black keeps the anchor: (i) with 11, White can play 10/8(2), leaving him in great shape to clear that point on his next roll; (ii) with 22, White can fully clear the outside point with 10/6(2), essentially winning the game on the spot; and (iii) with 33, White will sit tight on the 15-point, since he only has three playable 3’s in his inner board.
    - By contrast, if Black makes the anchor-splitting play, it turns out that White doesn’t do too well. His best plays in these cases are: (i) 10/9(2) 5/3 with 11; (ii) 6/4(2) 5/1 with 22;<sup>2</sup> and (iii) 10/7\* 7/1 5/2 with 33.

In all of these cases, Black is better off if he has split the anchor. The swing is particularly big with the 22 roll, as Black goes from essentially losing the game because contact is completely broken to instead having 17.8% Match Winning Chances (MWC), but Black also gains quite a bit after a 33 roll by White (almost a 10% improvement in MWC), since White is forced to break his outside point, giving Black seven indirect shots immediately (64, 55, 52 and 42), along with some additional residual shot-hitting chances from the checker that White is forced to put on the bar.

- Hit-and-Cover Rolls – White has 6 rolls that will allow him to hit one of Black’s blots and also cover the blot that White has on his 5-point (53, 52 and 32). While these were some of the rolls that worried me the most, it turns out that when White gets one of these rolls there is only a relatively small difference in equity as between the anchor-keeping play and the anchor-splitting play. While it’s true that White makes a strong inner board and leaves relatively few immediate indirect shots after hitting-and-covering, Black gets some compensation for this in the form of additional shot-hitting chances because he now has a checker on the bar.
  - For example, after Black splits the anchor and White rolls 52 (best played 10/5 10/8\*), in addition to being subject to three immediate indirect shots by Black from the bar (with rolls of 44 and 41), White also has a bunch of rolls that will force him to leave a shot on his next turn. 66, 65, 64, 63 and 55 each force him to leave an immediate shot in his inner board. Some other rolls will also leave White with some continuing residual shot-jeopardy as he tries to bring his checkers in and bear them off (*e.g.*, 54 is also a poor shot for White). The “Read the Numbers” analysis shows Black with 20.1% MWC if he makes the anchor-splitting play, and with 19.9% MWC if he makes the anchor-keeping play – a generally insignificant difference.
- Rolls Which Force White to Play Inside his Inner Board – White’s remaining 8 rolls (51, 41, 31 and 21) all essentially force him to maintain the status quo and make his move entirely within his inner board – *i.e.*, White adopts a “wait-and-see” approach to avoid giving Black an immediate direct shot. Again, in these cases there isn’t much difference in Black’s MWC when comparing his two alternative play choices.

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<sup>2</sup> eXtreme Gammon® finds this play to be better for White than 10/8\*(2) 5/1. It turns out that White mostly doesn’t want to put a Black checker on the bar if he can avoid it. Hitting just makes it harder for White to safely bring his men in and bear them off.

## **SUMMARY TAKE-AWAYS: THE PROBLEM POSITION**

Having now analyzed this position in considerable detail, here are a few take-aways.

First, in these types of positions that are highly tactical in nature, and which will likely resolve themselves over the course of the next few shakes, you simply must count your opponent's good rolls and his bad rolls. While this isn't always easy to do, and sometimes you'll mainly be making some rough "guesstimates," there really isn't a way around this if you are seeking to find the best play.

Second, it can be useful to put yourself in your opponent's shoes. In this particular case, I worried too much about White's possible hit-and-lift plays and hit-and-cover plays. For the former, the risk turned out to be non-existent, since White shouldn't even make a hit-and-lift play, and for the latter, the anchor-splitting play suffered from no significant loss in winning chances as compared to staying put on the 18-point. My overall failure here was in not properly understanding my opponent's primary game plan. In particular, White very much wants to just bring his checkers in without incident. Ideally, he'd like to clear the outside point or, failing that, to limit his risk to the mere possibility that he'll have to leave a single-direct shot in the future. For the most part, he doesn't even really WANT to hit a checker – putting a checker on the bar basically puts a thorn in his side as it creates an additional impediment to his ability to bring his checkers into his home board and bear them off. Hitting a blot actually works against his surest path to victory, which is to just get past my checkers on the 18-point and win the race. The risks that I entail in exposing the two blots in the outfield are more than offset by the gains I may realize from my improved chances of hitting a game-winning shot, including as a result of some of the additional shot-hitting chances that I might get if I wind up with a checker on the bar (or in White's inner board).

Third, it's important to carefully consider all of your opponent's possible rolls. Here, I completely underestimated the impact of the anchor-splitting play in those cases where White rolls small doubles. Ordinarily, you don't want to see your opponent roll small doubles after you split a point a few pips away from the point he needs to clear – in this case, though, the split actually works to your advantage. This counter-intuitive result comes about because White mostly doesn't want to hit the blots that the splitting play leaves (this is true even if he can do so relatively safely). As such, with a roll of 11 he only advances his outside point to his 9-point instead of to his 8-point, with a roll of 22 he doesn't advance his outside point at all (instead of clearing it completely, as he is able to do if Black stays put on the 18-point), and with a roll of 33 he hits the blot on his bar-point because he's actually forced to do so. All of these results are more favorable to Black than is the case when he stays put. As noted above, in the particular cases of White rolling 22 or 33, the differences in match winning chances are actually fairly significant. While there are only a few of these rolls, making it somewhat unlikely that you'll see them, when a lot of the other plays have small to insignificant differences in equity value, the impact from these unlikely to occur rolls (with a much larger difference in equity value) will quickly add up. The sum total of these effects will often have a bigger than expected impact on the overall decision as to which play is best. That was the case here.

## **SUMMARY TAKE-AWAYS: THE READ THE NUMBERS APPROACH TO ANALYSIS**

The Read the Numbers approach to analysis is obviously something that can't be done in an effective, practical manner in over-the-board play. It is much better suited to analysis in the comfort of your home, where you aren't subject to the constraints of a ticking game clock or an anxious opponent that doesn't have all day to wait for you to ponder your play and make your next move. Here is a summary of some take-aways regarding the application and benefits of this particular analytical approach:

- When you have difficulty getting a handle on the particulars of a problem position, it can sometimes be helpful to group the possible rolls you may see into discrete categories of position types. This might make the analysis more tractable insofar as you are breaking the problem down into more discrete components which can each be analyzed separately – e.g., in the problem position, we broke White's possible rolls into five specific

categories: clearing rolls, hit-and-lift rolls, rolls favorable to splitting, hit-and-cover rolls, and “wait-and-see” rolls.

- By looking at each group of possible rolls, and noting how each performs against the possible candidate plays, you’ll often find that your initial reactions have deceived you. Recognizing this will help you avoid making similar mistakes in comparable positions that you may face in the future.
- Sometimes, it turns out that there are only a few rolls that lead to large differences in equity, whereas most of the possible rolls result in more minor or even insignificant differences. Noticing these things will help you to focus on those features of the problem position that are of the greatest importance, while also identifying those factors that, for the most part, don’t really make much of a difference at all.

While this approach can obviously be a bit time consuming, it has the potential to greatly improve your understanding of some difficult problem positions. This will especially be the case for those more complicated positions where immediate tactical considerations are paramount, and long-term strategic considerations take a back seat.

## **EPILOGUE**

As noted above, I actually botched this play and elected to keep the anchor on the 18-point intact, playing 8/7 6/2. Mark responded with a roll of 42. Interestingly, he immediately volunteered a shot, playing 10/8 10/6 (best is the simple “wait-and-see” play, 6/4 5/1). I whiffed with a 42 roll, Mark followed with double-sixes, and it was lights out for me.

*C’est la vie.*

## **REFERENCE**

Robertie, Bill, *Modern Backgammon*, The Gammon Press, 2001.

## ANNEX – SUMMARY RESULTS FROM “READ THE NUMBERS” EXERCISE FOR THIS PROBLEM

White's Roll	After Black Plays 8/7 6/2			After Black Plays 18/17 6/2			
	Best Play	Black Win %	Shot Numbers (out of 36)	Best Play	Black Win %	Shot Numbers (out of 36)	Comments
11	10/8(2)	6.00%	0	10/9(2) 5/3	10.50%	0	
22	10/6(2)	1.60%	0	6/4(2) 5/1	17.80%	0	10/8*(2) 5/1 is worse at 19.3%
33	6/3(2) 5/2	20.90%	0	10/7* 7/1 5/2	29.80%	7	
44	10/2(2)	0.60%	0	10/2(2)	0.70%	0	
55	10/o(2)	0.10%	0	10/o(2)	0.10%	0	
66	10/4(2) 6/o(2)	0.00%	0	10/4(2) 6/o(2)	0.00%	0	
12	6/4 5/4	18.00%	0	5/3 2/1	18.30%	0	6/4 5/4 is about the same
13	5/1	18.70%	0	6/5 6/3	17.20%	0	5/1 is worse at 18.7%
14	5/1 2/1	18.70%	0	6/5 6/2	17.70%	0	5/1 2/1 is worse at 18.8%
15	6/1 5/4	18.90%	0	6/5 6/1	17.70%	0	6/1 5/4 is worse at 20.5%
16	10/9 10/4	32.60%	12	10/9 10/4	51.70%	20	
23	6/4 5/2	19.00%	0	10/8* 8/5	20.20%	4	6/4 5/2 is worse at 20.5%
24	6/4 5/1	18.90%	0	6/4 5/1	20.40%	0	10/8* 5/1 is much worse at 42.1%
25	6/4 6/1	20.10%	0	10/5 10/8*	19.90%	3	6/4 6/1 is worse at 22.9%
26	10/8 10/4	28.90%	11	10/8* 8/2	53.70%	15	
34	6/3 5/1	21.10%	0	6/3 5/1	23.00%	0	10/7* 5/1 is much worse at 35.9%
35	6/3 6/1	21.70%	0	10/5 10/7*	18.10%	2	6/3 6/1 is worse at 24.6%
36	10/4 5/2	38.30%	14	10/7* 7/1	53.60%	15	10/4 5/2 is worse at 54.9%
45	10/6 10/5	1.20%	0	10/6 10/5	1.30%	0	
46	10/6 10/4	0.80%	0	10/6 10/4	1.00%	0	
56	10/5 10/4	0.60%	0	10/5 10/4	0.70%	0	
AVERAGE		16.23%	2.06		20.22%	3.47	

Black Win % figures generated using XG Roller++.

Plays where the match winning chances differ by more than 5% are highlighted in orange.

Plays where the match winning chances differ by between 2% and 5% are highlighted in light green.

No highlighting is employed when there is less than a 2% difference in the respective match winning chances. (As you can see, most of White's possible next rolls fall into this category.)