

Prime vs. Prime Cube Action, Part 1: Basic Reference Positions

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by Matt Cohn-Geier

The most complex positions in backgammon are prime vs. prime. Typically, one player has a clear advantage, however, how much of one is difficult to quantify. Sometimes it involves winning many gammons even though the game might be close to a toss up. A small change to a position can make an enormous difference. Even the best players struggle to understand these positions and frequently make huge mistakes. I'm going to try to tackle some of these problems and look at the various factors that go into cube action.



Matt Cohn-Geier

Tackling prime vs. prime positions is more difficult than one might imagine. If it's difficult for expert players to understand, it must be really difficult to teach. To bridge the gap, I'm going to go back to one of my favorite pastimes, looking at a variety of borderline reference positions and trying to draw some conclusions between them. This month, we're going to look at very pure situations: trying to leap a solid 5 prime while having a 6 prime of one's own. Next month, we'll tackle some more impure situations that are more likely to come up OTB.

Don't worry if you can't remember whether one of the positions is a double or not, or a take or not. As long as you can remember that they are on the edge then you can infer much more about a whole class of position-types.

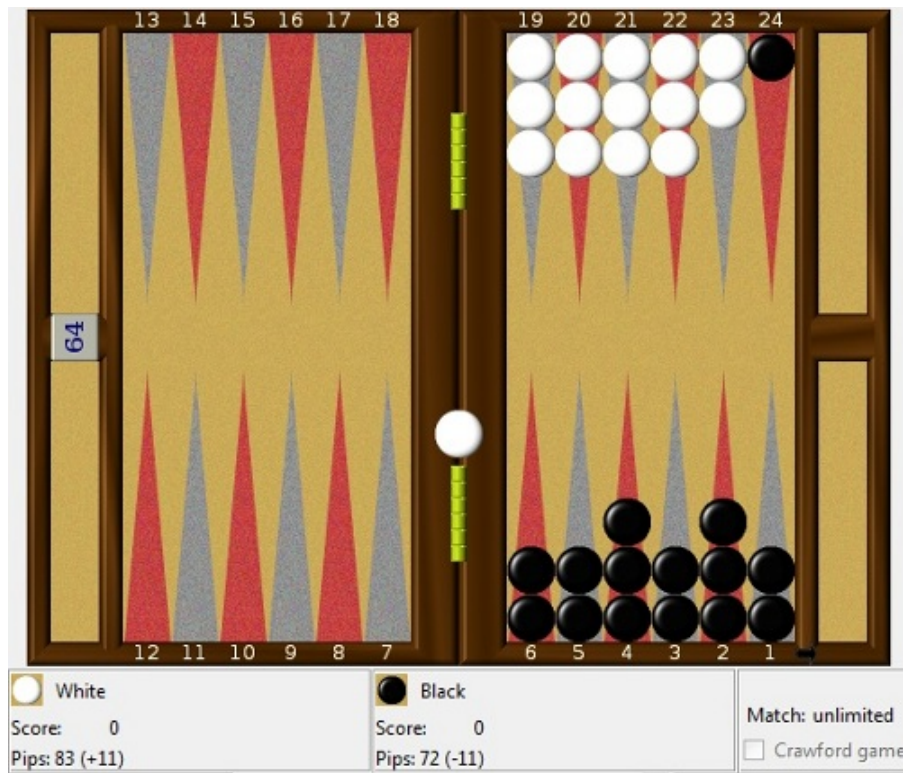
A lot of people have asked me questions about how I study backgammon, about why reference positions are important, about why borderline positions are important, about what kinds of reference positions to study, and everything else under the sun. Hopefully this article will help to shed some light on what it is that an expert player can do to improve his game, if he has the desire.

A word about timing: Though in the past I and others have referred to the pips of timing left it would take to advance everyone to the ace point (or to just in front of the opponent's anchor, etc.), I'm just going to refer to it by straight pip count. I have no idea if this will be more accurate or less accurate (although my guess would be less accurate) but it will be easier for me to remember.

All positions are for money games **WITHOUT** Jacoby. Since most doubles in these kinds of positions are going to be redoubles (or centered cubes in a match), I want to investigate the difference between a centered double and a redouble, not the effect that Jacoby and activating gammons has on the cube action. That is more of a specialized subject unto itself.

So, without further ado, let's begin.

Position 1A:



Let's start with something that everyone should know, and is simple and easy to remember. White has one checker on the bar against a closed board, Black is behind a 5 prime and needs to roll a 6 or crash his board. This position is a borderline double/no double with a centered cube.

Analyzed in Rollout

No Double
 Player Winning Chances: 58.86% (G: 1.39% B: 0.01%)
 Opponent Winning Chances: 41.14% (G: 1.99% B: 0.05%)
 Double/Take
 Player Winning Chances: 58.95% (G: 1.45% B: 0.02%)
 Opponent Winning Chances: 41.05% (G: 1.96% B: 0.04%)
 Cubeless Equities
 No Double: +0.171
 Double: +0.347
 Cubeful Equities
 No Double: +0.126 (-0.004)
 Double/Take: +0.130
 Double/Drop: +1.000 (+0.870)
 Best Cube action: Double / Take
 Rollout details
 2592 Games rolled with Variance Reduction.
 Dice Seed: 134923
 Moves and cube decisions: 3 ply
 Confidence No Double: ± 0.005 (+0.121...+0.131)
 Confidence Double: ± 0.008 (+0.122...+0.138)
 Double Decision confidence: 78.6%
 Take Decision confidence: 100.0%
 Duration: 1 minute 25 seconds

Position 1B:



How much difference can a pip make? Well, if we give Black a spare on his 3 point (i.e., almost all rolls are the same but 32 keeps a closed board), now it becomes a big double.

Analyzed in Rollout

No Double

Player Winning Chances: 60.23% (G: 1.49% B: 0.01%)

Opponent Winning Chances: 39.77% (G: 1.78% B: 0.05%)

Double/Take

Player Winning Chances: 60.45% (G: 1.56% B: 0.02%)

Opponent Winning Chances: 39.55% (G: 1.72% B: 0.05%)

Cubeless Equities

No Double: +0.202

Double: +0.414

Cubeful Equities

No Double: +0.168 (-0.054)

Double/Take: +0.222

Double/Drop: +1.000 (+0.778)

Best Cube action: Double / Take

Rollout details

2592 Games rolled with Variance Reduction.

Dice Seed: 134923

Moves and cube decisions: 3 ply

Confidence No Double: ± 0.005 (+0.163...+0.172)

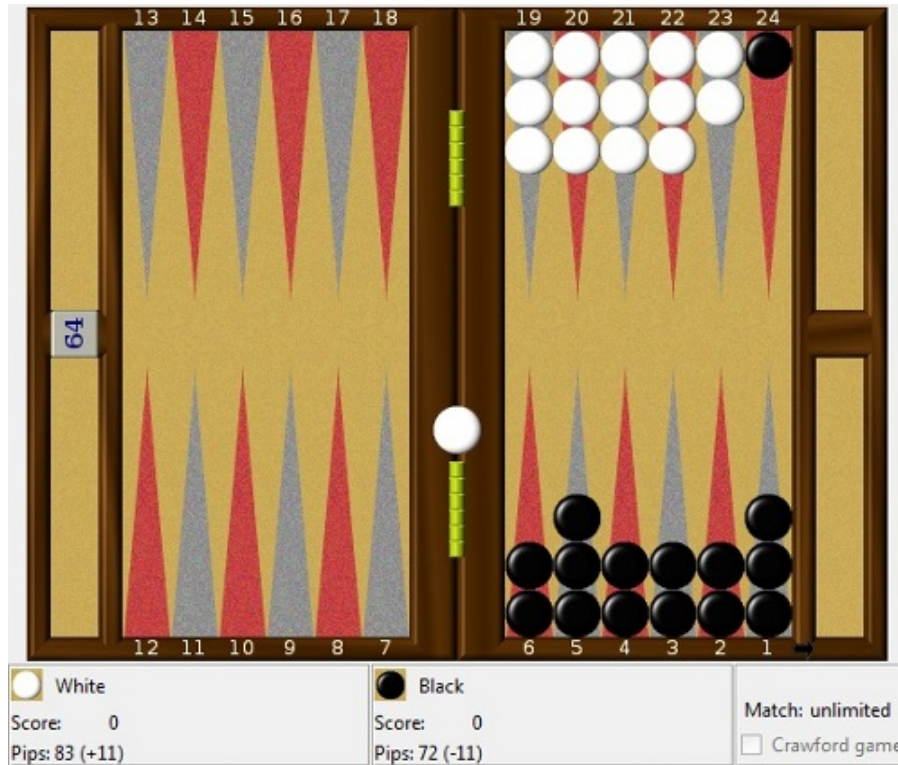
Confidence Double: ± 0.007 (+0.215...+0.229)

Double Decision confidence: 100.0%

Take Decision confidence: 100.0%

Duration: 49.5 seconds

Position 1C:



What about if the spares were on the 5 and 1 rather than the 4 and 2? Barely a difference here.

Analyzed in Rollout

No Double

Player Winning Chances: 59.59% (G: 1.25% B: 0.01%)

Opponent Winning Chances: 40.41% (G: 2.21% B: 0.06%)

Double/Take

Player Winning Chances: 59.51% (G: 1.43% B: 0.02%)

Opponent Winning Chances: 40.49% (G: 2.19% B: 0.06%)

Cubeless Equities

No Double: +0.182

Double: +0.364

Cubeful Equities

No Double: +0.144

Double/Take: +0.141 (-0.002)

Double/Drop: +1.000 (+0.856)

Best Cube action: No Double / Take

Rollout details

2592 Games rolled with Variance Reduction.

Dice Seed: 134923

Moves and cube decisions: 3 ply

Confidence No Double: ± 0.005 (+0.139...+0.148)

Confidence Double: ± 0.009 (+0.132...+0.150)

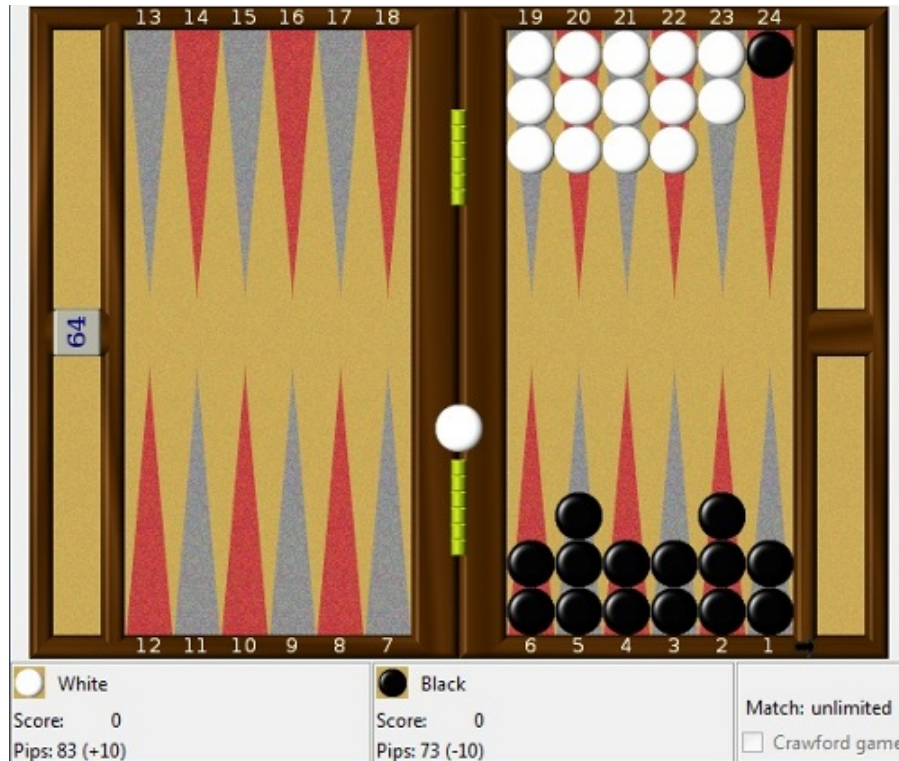
Double Decision confidence: 68.2%

Take Decision confidence: 100.0%

Duration: 51.9 seconds

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Position 1D:



With spares on the 5 and 2, it is a cube, but not nearly as big as spares on the 4 and 3. As we'll see later, this is one of the few instances where having a spare on the 5 point is actually worse than the alternative configuration.

Analyzed in Rollout

No Double

Player Winning Chances: 60.54% (G: 1.32% B: 0.01%)

Opponent Winning Chances: 39.46% (G: 2.20% B: 0.06%)

Double/Take

Player Winning Chances: 60.41% (G: 1.54% B: 0.02%)

Opponent Winning Chances: 39.59% (G: 2.17% B: 0.06%)

Cubeless Equities

No Double: +0.202

Double: +0.403

Cubeful Equities

No Double: +0.162 (-0.023)

Double/Take: +0.185

Double/Drop: +1.000 (+0.815)

Best Cube action: Double / Take

Rollout details

2592 Games rolled with Variance Reduction.

Dice Seed: 134923

Moves and cube decisions: 3 ply

Confidence No Double: ± 0.004 (+0.158...+0.167)

Confidence Double: ± 0.008 (+0.177...+0.193)

Double Decision confidence: 100.0%

Take Decision confidence: 100.0%

Duration: 1 minute 01 second

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Position 1E:



With spares on the 6 and 1, not only is it clearly not a cube, it's now a beaver! With very little timing, the 6 point is the worst place to have a spare. Note that even though this position gains a pip of timing over Position 1C (ostensibly allowing Black to play rolls like 41 and 32 while keeping a closed board), it's considerably worse to have the checker on the 6 rather than the 5.

Analyzed in Rollout

No Double

Player Winning Chances: 58.19% (G: 1.38% B: 0.01%)

Opponent Winning Chances: 41.81% (G: 4.81% B: 0.14%)

Double/Take

Player Winning Chances: 58.34% (G: 1.26% B: 0.01%)

Opponent Winning Chances: 41.66% (G: 4.79% B: 0.14%)

Cubeless Equities

No Double: +0.128

Double: +0.260

Cubeful Equities

No Double: +0.054

Double/Take: -0.042 (-0.096)

Double/Drop: +1.000 (+0.946)

Best Cube action: No Double / Beaver

Rollout details

2592 Games rolled with Variance Reduction.

Dice Seed: 134923

Moves and cube decisions: 3 ply

Confidence No Double: ± 0.007 (+0.047...+0.061)

Confidence Double: ± 0.027 (-0.069...-0.015)

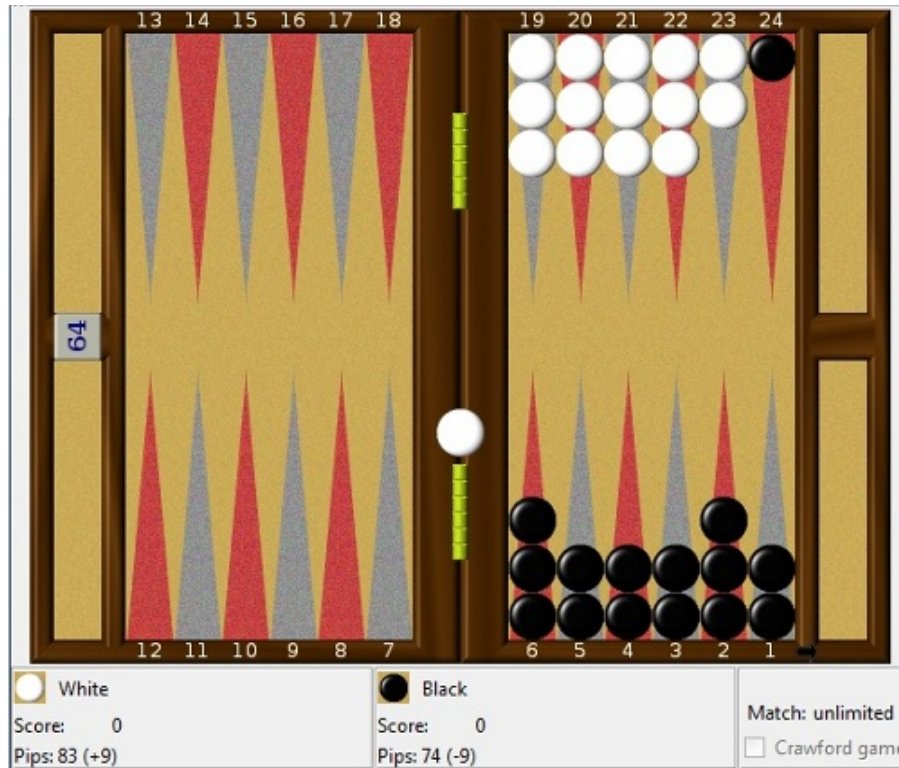
Double Decision confidence: 100.0%

Beaver Decision confidence: 99.9%

Duration: 1 minute 18 seconds

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Position 1F:



In fact, even with spares on the 6 and 2, it's not an initial cube. There are too many bad blotting rolls. Note the increase in the number of gammons that White wins.

Analyzed in Rollout

No Double

Player Winning Chances: 59.62% (G: 1.42% B: 0.01%)

Opponent Winning Chances: 40.38% (G: 4.15% B: 0.13%)

Double/Take

Player Winning Chances: 59.79% (G: 1.39% B: 0.02%)

Opponent Winning Chances: 40.21% (G: 4.13% B: 0.13%)

Cubeless Equities

No Double: +0.164

Double: +0.335

Cubeful Equities

No Double: +0.098

Double/Take: +0.069 (-0.029)

Double/Drop: +1.000 (+0.902)

Best Cube action: No Double / Take

Rollout details

2592 Games rolled with Variance Reduction.

Dice Seed: 134923

Moves and cube decisions: 3 ply

Confidence No Double: ± 0.006 (+0.092...+0.104)

Confidence Double: ± 0.012 (+0.057...+0.081)

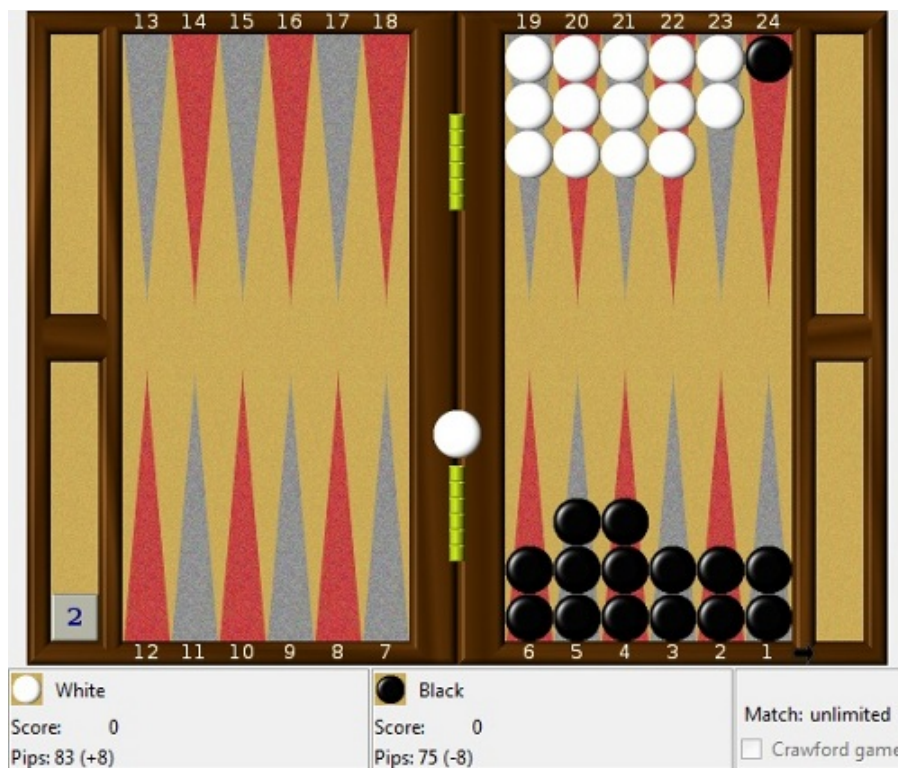
Double Decision confidence: 100.0%

Take Decision confidence: 100.0%

Duration: 1 minute 15 seconds

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Position 1G:



Much more often the case will be that Black is holding the cube. In that case, the reference that he needs to redouble is this. Anything better than this will be a redouble, and anything worse than this won't be.

Analyzed in Rollout

No Double

Player Winning Chances: 63.70% (G: 1.57% B: 0.01%)

Opponent Winning Chances: 36.30% (G: 2.03% B: 0.05%)

Double/Take

Player Winning Chances: 64.00% (G: 1.67% B: 0.02%)

Opponent Winning Chances: 36.00% (G: 1.74% B: 0.05%)

Cubeless Equities

No Redouble: +0.269

Redouble: +0.558

Cubeful Equities

No Redouble: +0.348 (-0.015)

Redouble/Take: +0.363

Redouble/Drop: +1.000 (+0.637)

Best Cube action: Redouble / Take

Rollout details

2592 Games rolled with Variance Reduction.

Dice Seed: 134923

Moves and cube decisions: 3 ply

Confidence No Redouble: ± 0.004 (+0.343...+0.352)

Confidence Redouble: ± 0.007 (+0.356...+0.371)

Double Decision confidence: 100.0%

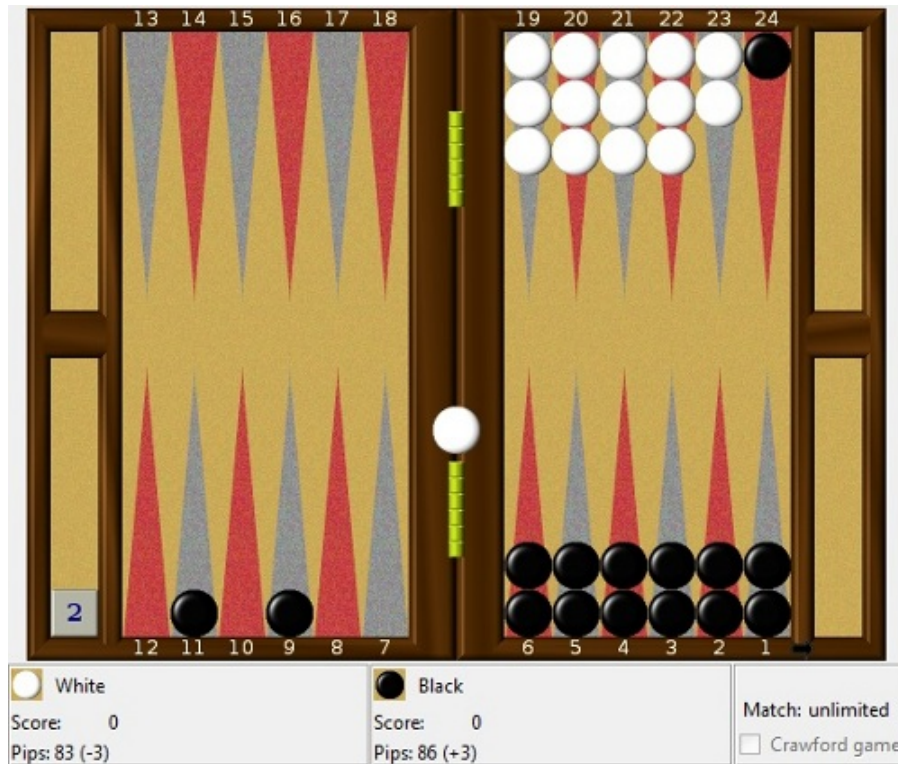
Take Decision confidence: 100.0%

Duration: 1 minute 24 seconds

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Now let's give Black some more timing and see what happens.

Position 2A:



Another position everyone should know. This is a borderline drop/take.

Analyzed in Rollout

No Double

Player Winning Chances: 77.71% (G: 1.92% B: 0.02%)

Opponent Winning Chances: 22.29% (G: 1.23% B: 0.04%)

Double/Take

Player Winning Chances: 77.78% (G: 1.97% B: 0.02%)

Opponent Winning Chances: 22.22% (G: 1.19% B: 0.03%)

Cubeless Equities

No Redouble: +0.561

Redouble: +1.127

Cubeful Equities

No Redouble: +0.749 (-0.251)

Redouble/Take: +1.007 (+0.007)

Redouble/Drop: +1.000

Best Cube action: Redouble / Drop

Rollout details

2592 Games rolled with Variance Reduction.

Dice Seed: 134923

Moves and cube decisions: 3 ply

Confidence No Redouble: ± 0.007 (+0.742...+0.756)

Confidence Redouble: ± 0.008 (+0.999...+1.014)

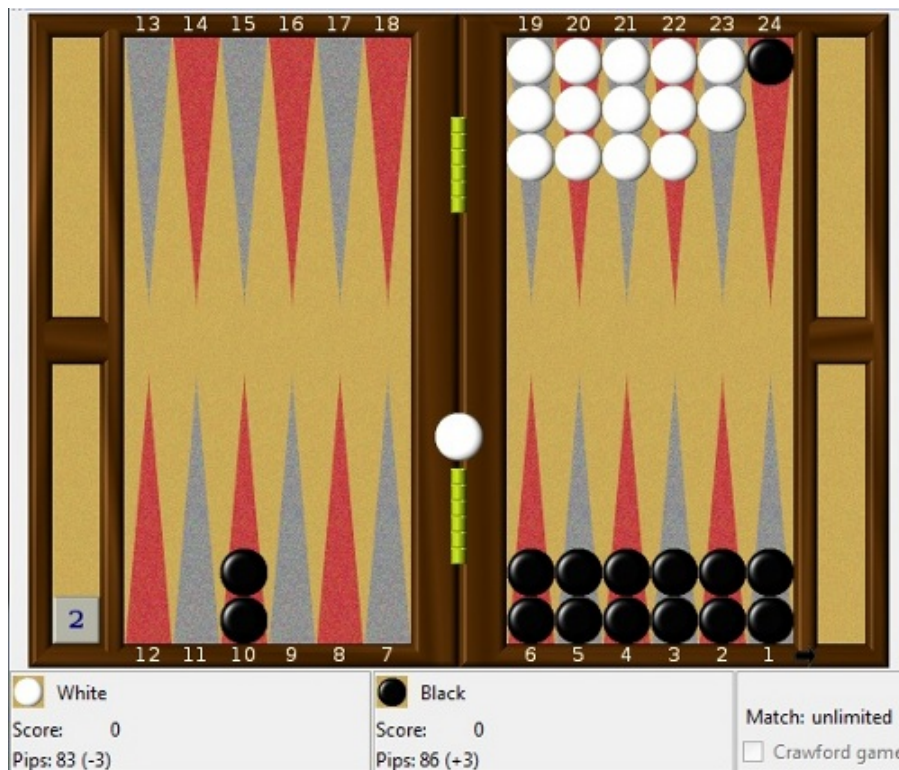
Double Decision confidence: 100.0%

Take Decision confidence: 95.5%

Duration: 1 minute 14 seconds

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Position 2B:



Undiversifying the checkers doesn't change things. The major thing here is the pip count. That makes this easy to remember also: with 20 pips in the outfield, it's a borderline decision. Let's test out our theory by putting one of those checkers into the inner board.

Analyzed in Rollout

No Double

Player Winning Chances: 77.62% (G: 1.94% B: 0.02%)

Opponent Winning Chances: 22.38% (G: 1.02% B: 0.03%)

Double/Take

Player Winning Chances: 77.72% (G: 1.98% B: 0.03%)

Opponent Winning Chances: 22.28% (G: 1.01% B: 0.03%)

Cubeless Equities

No Redouble: +0.561

Redouble: +1.128

Cubeful Equities

No Redouble: +0.751 (-0.249)

Redouble/Take: +1.007 (+0.007)

Redouble/Drop: +1.000

Best Cube action: Redouble / Drop

Rollout details

2592 Games rolled with Variance Reduction.

Dice Seed: 134923

Moves and cube decisions: 3 ply

Confidence No Redouble: ± 0.007 (+0.744...+0.758)

Confidence Redouble: ± 0.008 (+0.999...+1.015)

Double Decision confidence: 100.0%

Take Decision confidence: 96.4%

Duration: 57.7 seconds

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Position 2C:



With a checker on the 16 and a checker on the 4, we have a definite take. What happened? It isn't obvious.

Analyzed in Rollout

No Double

Player Winning Chances: 76.81% (G: 1.94% B: 0.03%)

Opponent Winning Chances: 23.19% (G: 1.57% B: 0.05%)

Double/Take

Player Winning Chances: 77.03% (G: 1.93% B: 0.03%)

Opponent Winning Chances: 22.97% (G: 1.53% B: 0.04%)

Cubeless Equities

No Redouble: +0.540

Redouble: +1.089

Cubeful Equities

No Redouble: +0.713 (-0.248)

Redouble/Take: +0.961

Redouble/Drop: +1.000 (+0.039)

Best Cube action: Redouble / Take

Rollout details

2592 Games rolled with Variance Reduction.

Dice Seed: 134923

Moves and cube decisions: 3 ply

Confidence No Redouble: ± 0.007 (+0.706...+0.720)

Confidence Redouble: ± 0.009 (+0.952...+0.969)

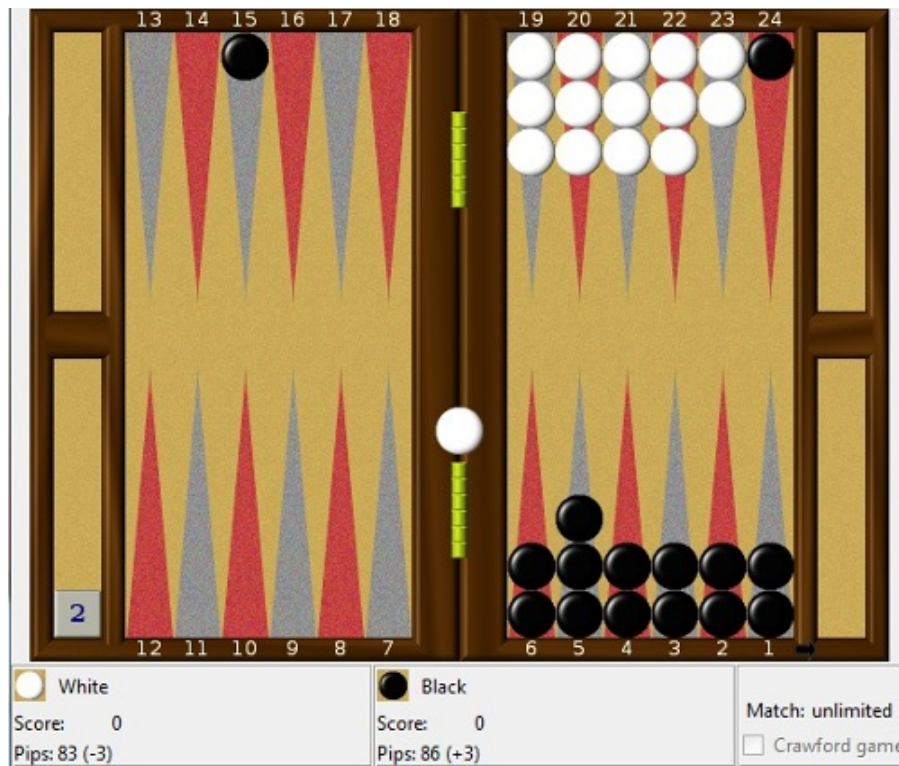
Double Decision confidence: 100.0%

Take Decision confidence: 100.0%

Duration: 1 minute 01 second

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Position 2D:



With one on the 15 and one on the 5, we're back to a borderline decision. What about the 14 and 6?

Analyzed in Rollout

No Double

Player Winning Chances: 77.75% (G: 1.93% B: 0.02%)

Opponent Winning Chances: 22.25% (G: 1.04% B: 0.03%)

Double/Take

Player Winning Chances: 77.87% (G: 1.97% B: 0.03%)

Opponent Winning Chances: 22.13% (G: 1.02% B: 0.03%)

Cubeless Equities

No Redouble: +0.564

Redouble: +1.134

Cubeful Equities

No Redouble: +0.752 (-0.248)

Redouble/Take: +1.009 (+0.009)

Redouble/Drop: +1.000

Best Cube action: Redouble / Drop

Rollout details

2592 Games rolled with Variance Reduction.

Dice Seed: 134923

Moves and cube decisions: 3 ply

Confidence No Redouble: ± 0.007 (+0.745...+0.759)

Confidence Redouble: ± 0.008 (+1.002...+1.017)

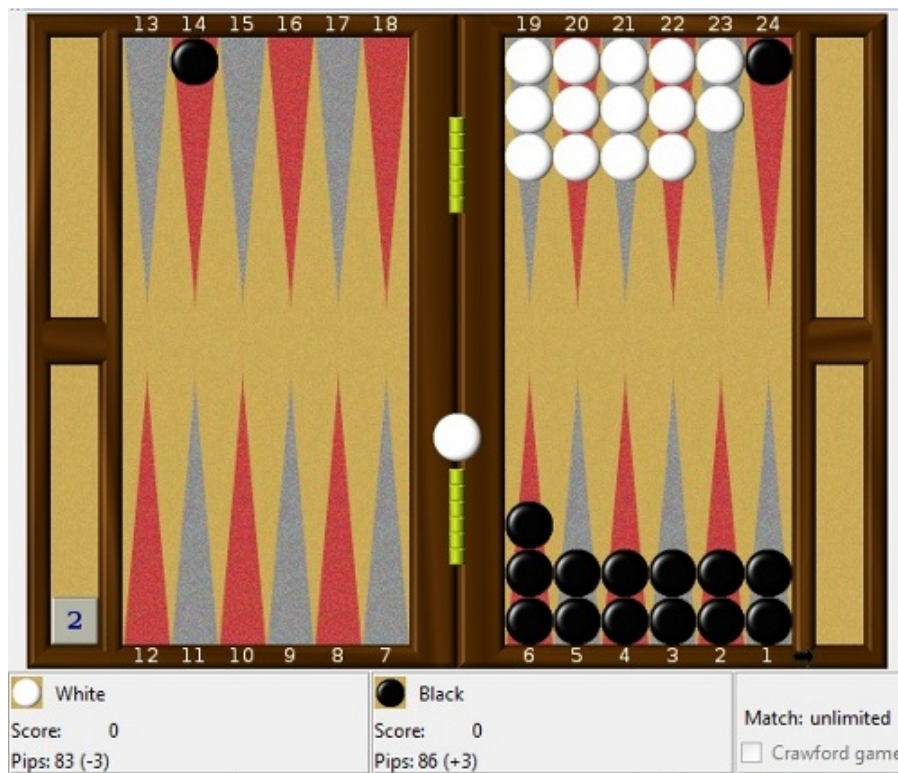
Double Decision confidence: 100.0%

Take Decision confidence: 99.2%

Duration: 53.8 seconds

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Position 2E:



Back to borderline again. The key here seems to be that the 5 point is the best place to have a checker in these kinds of positions. Putting a checker on the 6 point with this much timing is almost as good because one of the checkers is likely to end up on the 5 point, whereas a checker on the 4 point can never land on the 5 point.

Analyzed in Rollout

No Double

Player Winning Chances: 77.55% (G: 1.93% B: 0.03%)

Opponent Winning Chances: 22.45% (G: 1.22% B: 0.04%)

Double/Take

Player Winning Chances: 77.59% (G: 1.97% B: 0.03%)

Opponent Winning Chances: 22.41% (G: 1.23% B: 0.04%)

Cubeless Equities

No Redouble: +0.558

Redouble: +1.118

Cubeful Equities

No Redouble: +0.743 (-0.248)

Redouble/Take: +0.991

Redouble/Drop: +1.000 (+0.009)

Best Cube action: Redouble / Take

Rollout details

2592 Games rolled with Variance Reduction.

Dice Seed: 134923

Moves and cube decisions: 3 ply

Confidence No Redouble: ± 0.007 (+0.736...+0.750)

Confidence Redouble: ± 0.008 (+0.984...+0.999)

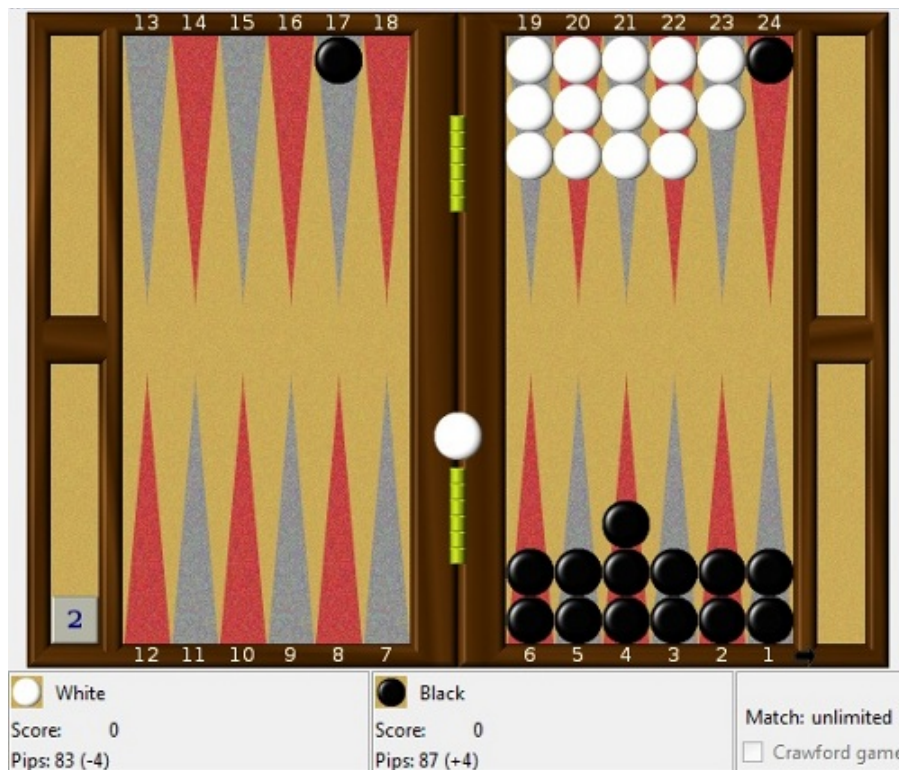
Double Decision confidence: 100.0%

Take Decision confidence: 98.9%

Duration: 54.7 seconds

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Position 2F:



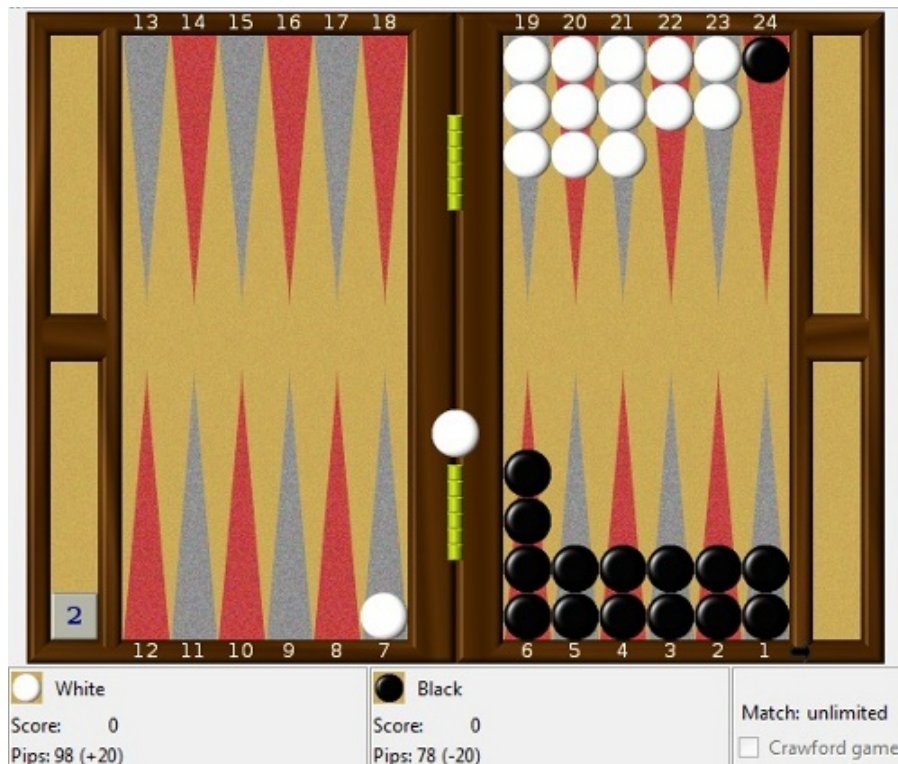
Again pip count is by far the major factor rather than placement of spares. If we modify Position 2C to add a pip of timing we reach a clear pass.

Analyzed in Rollout
 No Double
 Player Winning Chances: 78.10% (G: 1.97% B: 0.02%)
 Opponent Winning Chances: 21.90% (G: 1.21% B: 0.03%)
 Double/Take
 Player Winning Chances: 78.29% (G: 2.01% B: 0.03%)
 Opponent Winning Chances: 21.71% (G: 1.17% B: 0.03%)
 Cubeless Equities
 No Redouble: +0.569
 Redouble: +1.148
 Cubeful Equities
 No Redouble: +0.762 (-0.238)
 Redouble/Take: +1.027 (+0.027)
 Redouble/Drop: +1.000
 Best Cube action: Redouble / Drop
 Rollout details
 2592 Games rolled with Variance Reduction.
 Dice Seed: 134923
 Moves and cube decisions: 3 ply
 Confidence No Redouble: ± 0.007 (+0.755...+0.769)
 Confidence Redouble: ± 0.008 (+1.020...+1.035)
 Double Decision confidence: 100.0%
 Take Decision confidence: 100.0%
 Duration: 46.0 seconds

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This is mostly familiar stuff, but let's get beyond simple material and mix it up a bit by adding blots to the picture.

Position 3A:



With a blot in the outfield it's a bit different. Here it's a big redouble/take even though the pips are about the same as before and Black has no additional checkers or time to go after the White blot. White's blot is in the worst place in the outfield, other than his own bar. Note that Black wins 17% gammons from here. Everyone should know that if he picks up the other blot he wins about 40% gammons, but even if he escapes and misses as he comes into the home board, he still wins somewhere between about 17% and 21%, depending on the nature of the spares. With all 3 spares on the ace point he still wins 11% gammons.

Analyzed in Rollout

No Double

Player Winning Chances: 68.33% (G: 17.48% B: 0.27%)

Opponent Winning Chances: 31.67% (G: 1.84% B: 0.05%)

Double/Take

Player Winning Chances: 69.20% (G: 17.06% B: 0.24%)

Opponent Winning Chances: 30.79% (G: 1.69% B: 0.05%)

Cubeless Equities

No Redouble: +0.525

Redouble: +1.080

Cubeful Equities

No Redouble: +0.585 (-0.279)

Redouble/Take: +0.865

Redouble/Drop: +1.000 (+0.135)

Best Cube action: Redouble / Take

Rollout details

2592 Games rolled with Variance Reduction.

Dice Seed: 134923

Moves and cube decisions: 3 ply

Confidence No Redouble: ± 0.006 (+0.579...+0.591)

Confidence Redouble: ± 0.008 (+0.857...+0.873)

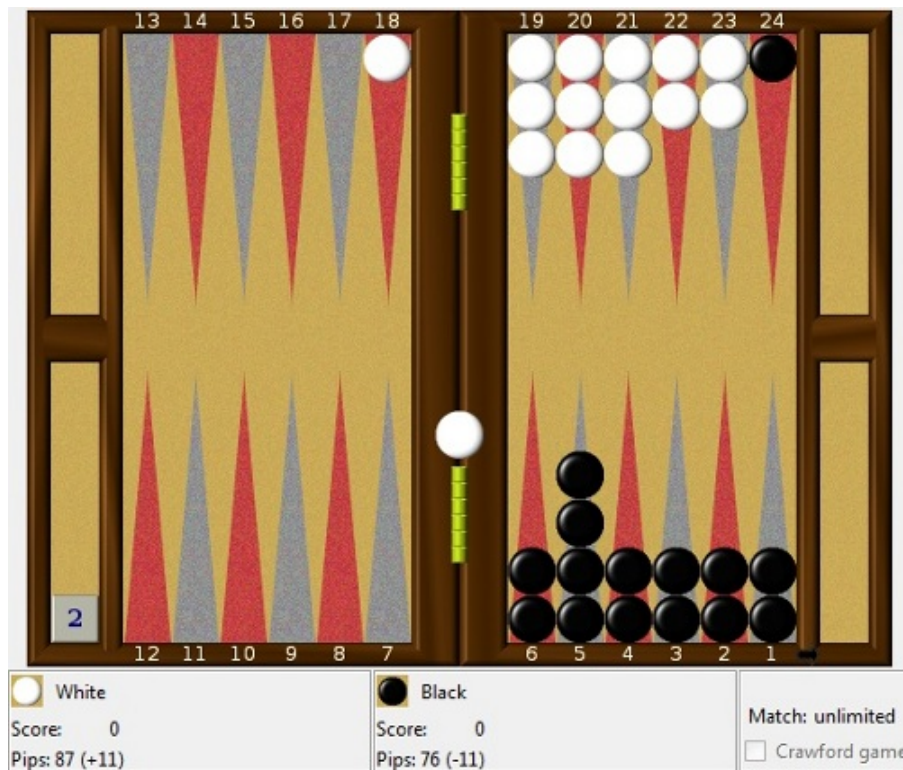
Double Decision confidence: 100.0%

Take Decision confidence: 100.0%

Duration: 2 minutes 49 seconds

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Position 3B:



With a blot occupying the back of the prime, it's much worse for White. This position, which would barely be a redouble if White's blot were moved to the 3 point (going by Position 1G), is getting close to a drop.

Analyzed in Rollout

No Double

Player Winning Chances: 66.69% (G: 23.65% B: 0.54%)

Opponent Winning Chances: 33.31% (G: 1.60% B: 0.04%)

Double/Take

Player Winning Chances: 67.24% (G: 23.18% B: 0.52%)

Opponent Winning Chances: 32.76% (G: 1.58% B: 0.04%)

Cubeless Equities

No Redouble: +0.559

Redouble: +1.131

Cubeful Equities

No Redouble: +0.641 (-0.296)

Redouble/Take: +0.937

Redouble/Drop: +1.000 (+0.063)

Best Cube action: Redouble / Take

Rollout details

2592 Games rolled with Variance Reduction.

Dice Seed: 134923

Moves and cube decisions: 3 ply

Confidence No Redouble: ± 0.009 (+0.632...+0.650)

Confidence Redouble: ± 0.010 (+0.927...+0.948)

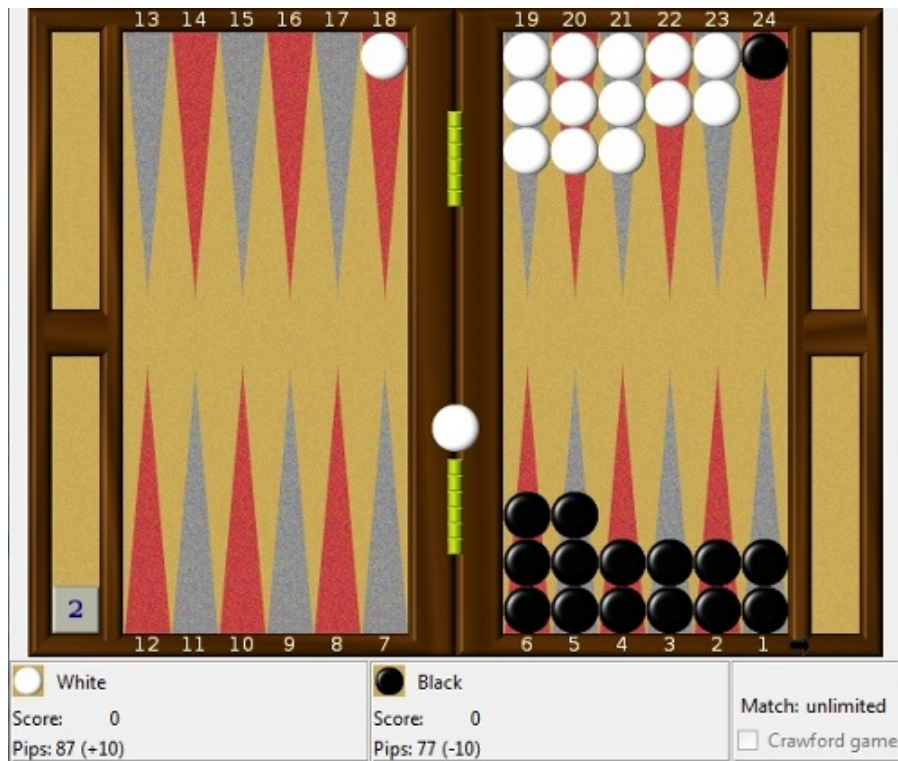
Double Decision confidence: 100.0%

Take Decision confidence: 100.0%

Duration: 1 minute 49 seconds

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Position 3C:



With one more pip now it's a big pass. So, with 10 pips in the inner board, it's the point of last take.

Analyzed in Rollout

No Double

Player Winning Chances: 69.18% (G: 25.32% B: 0.57%)

Opponent Winning Chances: 30.82% (G: 1.60% B: 0.04%)

Double/Take

Player Winning Chances: 69.39% (G: 25.03% B: 0.54%)

Opponent Winning Chances: 30.61% (G: 1.52% B: 0.04%)

Cubeless Equities

No Redouble: +0.626

Redouble: +1.256

Cubeful Equities

No Redouble: +0.733 (-0.267)

Redouble/Take: +1.077 (+0.077)

Redouble/Drop: +1.000

Best Cube action: Redouble / Drop

Rollout details

2592 Games rolled with Variance Reduction.

Dice Seed: 134923

Moves and cube decisions: 3 ply

Confidence No Redouble: ± 0.010 (+0.723...+0.742)

Confidence Redouble: ± 0.011 (+1.066...+1.087)

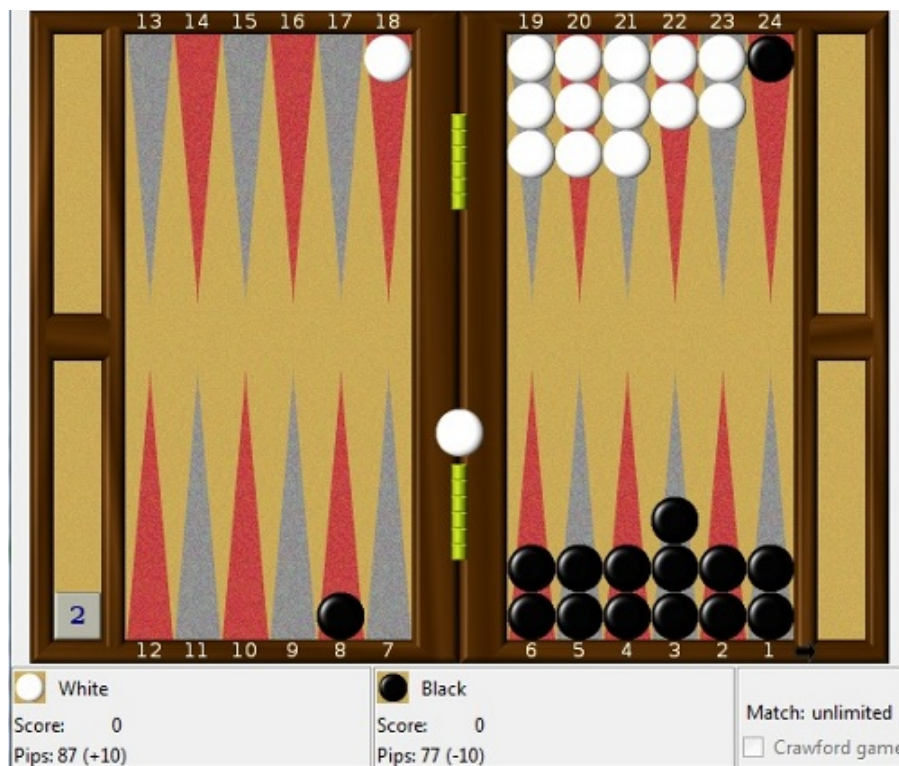
Double Decision confidence: 100.0%

Take Decision confidence: 100.0%

Duration: 1 minute 24 seconds

[eXtreme Gammon](#) Version: 1.21

Position 3D:



An interesting little factoid is that of the possible 11 pip configurations, the 8 and 3 is the worst. In fact, it's bad enough that it's a clear take still. No other 11 pip configuration is better than a borderline pass. The reason seems to be that it can't handle 54, 53, and 44 breaks two points.

Analyzed in Rollout

No Double

Player Winning Chances: 67.25% (G: 24.22% B: 0.55%)

Opponent Winning Chances: 32.75% (G: 2.45% B: 0.07%)

Double/Take

Player Winning Chances: 67.58% (G: 23.87% B: 0.52%)

Opponent Winning Chances: 32.42% (G: 2.47% B: 0.07%)

Cubeless Equities

No Redouble: +0.567

Redouble: +1.140

Cubeful Equities

No Redouble: +0.675 (-0.273)

Redouble/Take: +0.948

Redouble/Drop: +1.000 (+0.052)

Best Cube action: Redouble / Take

Rollout details

2592 Games rolled with Variance Reduction.

Dice Seed: 134923

Moves and cube decisions: 3 ply

Confidence No Redouble: ± 0.009 (+0.666...+0.685)

Confidence Redouble: ± 0.011 (+0.937...+0.960)

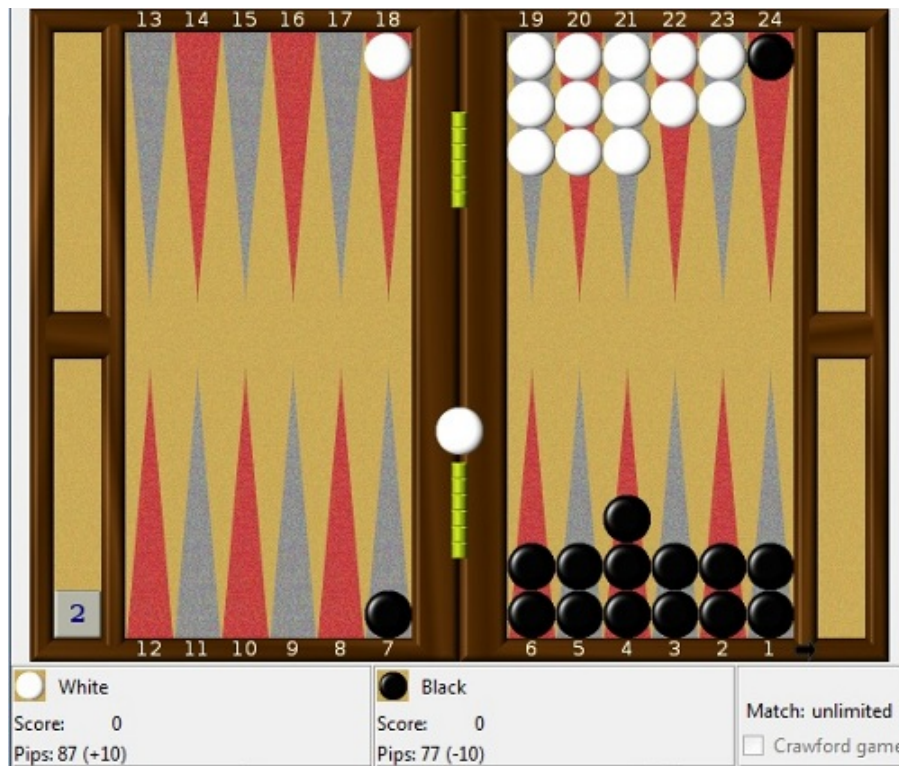
Double Decision confidence: 100.0%

Take Decision confidence: 100.0%

Duration: 1 minute 30 seconds

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Position 3E:



With spares on the 7 & 4, 44 still breaks two points but it can handle 53.

Analyzed in Rollout

No Double

Player Winning Chances: 68.19% (G: 24.86% B: 0.56%)

Opponent Winning Chances: 31.81% (G: 1.76% B: 0.05%)

Double/Take

Player Winning Chances: 68.53% (G: 24.43% B: 0.53%)

Opponent Winning Chances: 31.47% (G: 1.72% B: 0.05%)

Cubeless Equities

No Redouble: +0.600

Redouble: +1.205

Cubeful Equities

No Redouble: +0.703 (-0.297)

Redouble/Take: +1.020 (+0.020)

Redouble/Drop: +1.000

Best Cube action: Redouble / Drop

Rollout details

2592 Games rolled with Variance Reduction.

Dice Seed: 134923

Moves and cube decisions: 3 ply

Confidence No Redouble: ± 0.009 (+0.693...+0.712)

Confidence Redouble: ± 0.011 (+1.009...+1.031)

Double Decision confidence: 100.0%

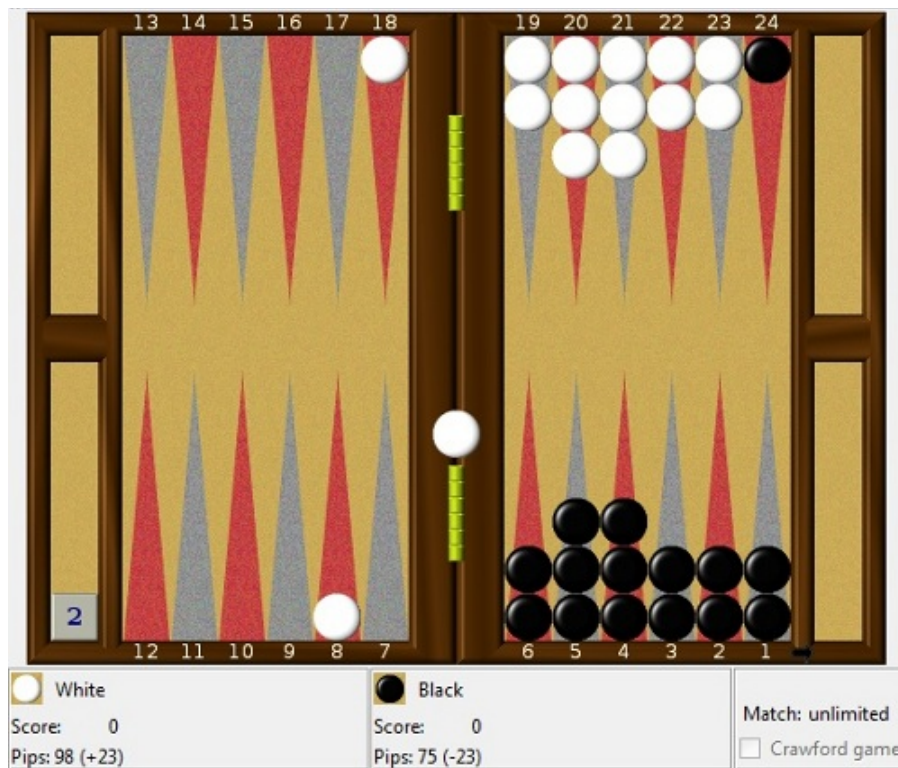
Take Decision confidence: 100.0%

Duration: 1 minute 35 seconds

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Let's look at 2 blot positions.

Position 4A:



With 2 blots strewn in the outfield, it becomes a huge pass really quickly. This was our reference for borderline redouble in Position 1G, here a monster pass.

Analyzed in Rollout

No Double

Player Winning Chances: 67.69% (G: 41.47% B: 1.45%)

Opponent Winning Chances: 32.31% (G: 2.03% B: 0.05%)

Double/Take

Player Winning Chances: 66.08% (G: 41.50% B: 1.39%)

Opponent Winning Chances: 33.92% (G: 1.93% B: 0.05%)

Cubeless Equities

No Redouble: +0.762

Redouble: +1.461

Cubeful Equities

No Redouble: +0.922 (-0.078)

Redouble/Take: +1.196 (+0.196)

Redouble/Drop: +1.000

Best Cube action: Redouble / Drop

Rollout details

2592 Games rolled with Variance Reduction.

Dice Seed: 134923

Moves and cube decisions: 3 ply

Confidence No Redouble: ± 0.009 (+0.913...+0.931)

Confidence Redouble: ± 0.014 (+1.182...+1.209)

Double Decision confidence: 100.0%

Take Decision confidence: 100.0%

Duration: 2 minutes 36 seconds

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Position 4B:



However, the 2 blots also reaches a high state of volatility. Comparing Positions 1B and 1G, 2 pips meant about .140 of equity, while here it's worth .170. Escaping becomes better than usual and crashing becomes worse (since you lose out on the opportunity to pick up the blots and win a gammon). That means the cube action becomes much more sensitive to the timing issues. This is our borderline take/drop reference (1 pip better than the initial cube reference in Position 1A).

Analyzed in Rollout

No Double

Player Winning Chances: 63.13% (G: 38.57% B: 1.13%)

Opponent Winning Chances: 36.87% (G: 1.84% B: 0.05%)

Double/Take

Player Winning Chances: 63.48% (G: 38.32% B: 1.07%)

Opponent Winning Chances: 36.52% (G: 1.73% B: 0.04%)

Cubeless Equities

No Redouble: +0.641

Redouble: +1.292

Cubeful Equities

No Redouble: +0.723 (-0.277)

Redouble/Take: +1.018 (+0.018)

Redouble/Drop: +1.000

Best Cube action: Redouble / Drop

Rollout details

2592 Games rolled with Variance Reduction.

Dice Seed: 134923

Moves and cube decisions: 3 ply

Confidence No Redouble: ± 0.010 (+0.713...+0.733)

Confidence Redouble: ± 0.012 (+1.006...+1.029)

Double Decision confidence: 100.0%

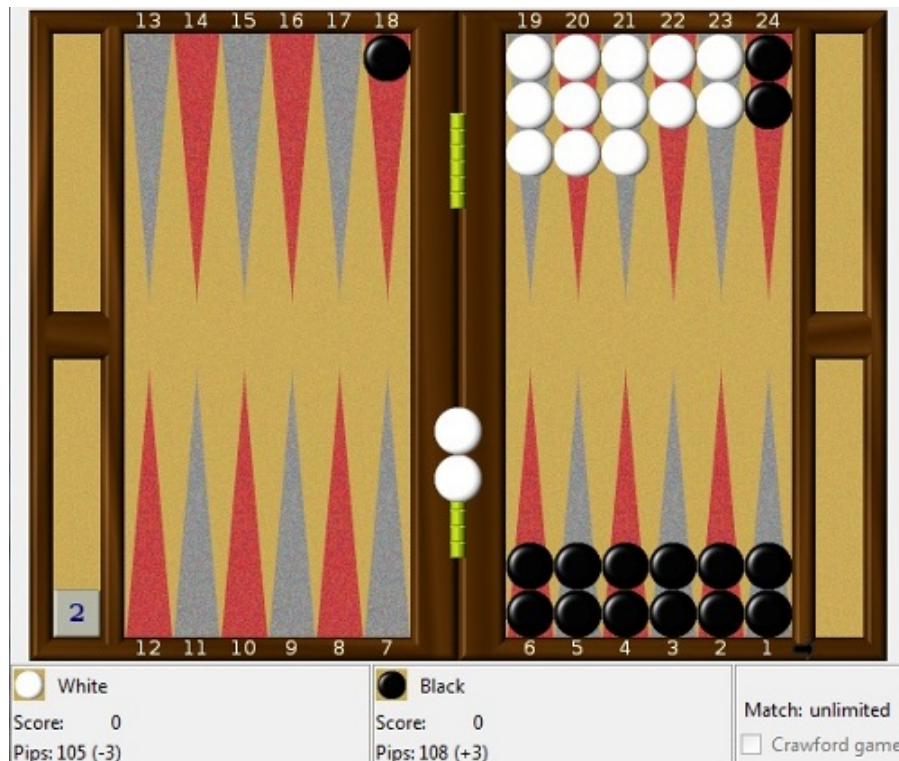
Take Decision confidence: 99.9%

Duration: 3 minutes 37 seconds

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Now let's look at 2 checkers to escape. How do they fare?

Position 5A:

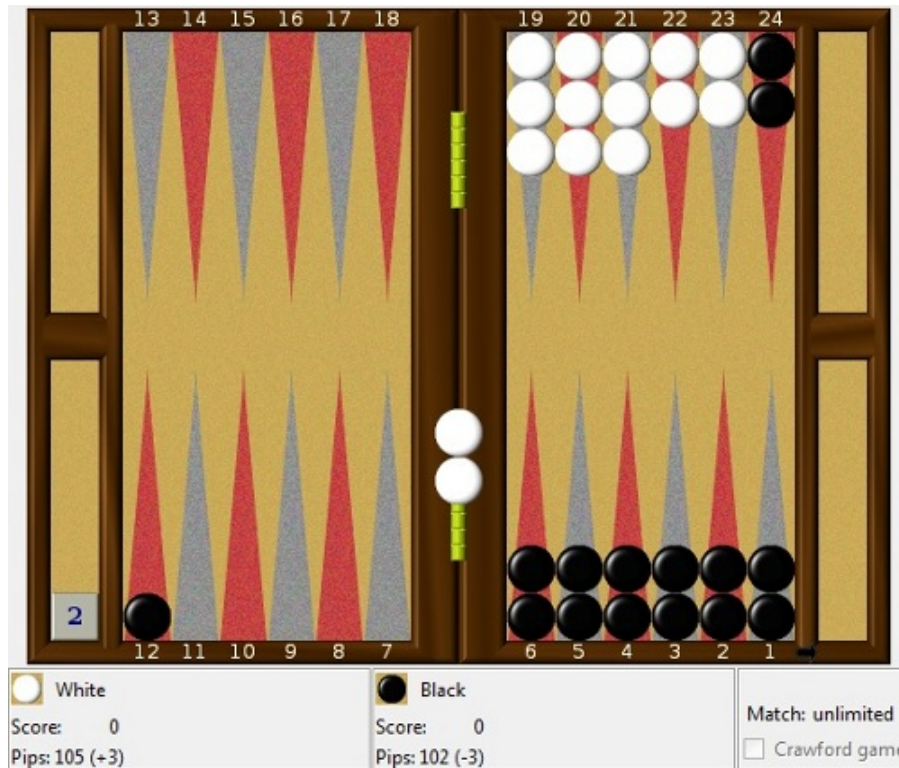


Here's another two reference positions that everyone should know. Vs. a perfect configuration like this, 2 checkers to escape will always be a take.

Analyzed in Rollout
 No Double
 Player Winning Chances: 68.89% (G: 25.10% B: 0.61%)
 Opponent Winning Chances: 31.11% (G: 6.27% B: 0.25%)
 Double/Take
 Player Winning Chances: 69.01% (G: 24.90% B: 0.60%)
 Opponent Winning Chances: 30.99% (G: 6.17% B: 0.25%)
 Cubeless Equities
 No Redouble: +0.570
 Redouble: +1.142
 Cubeful Equities
 No Redouble: +0.695 (-0.233)
 Redouble/Take: +0.929
 Redouble/Drop: +1.000 (+0.071)
 Best Cube action: Redouble / Take
 Rollout details
 2592 Games rolled with Variance Reduction.
 Dice Seed: 134923
 Moves and cube decisions: 3 ply
 Confidence No Redouble: ± 0.010 (+0.685...+0.706)
 Confidence Redouble: ± 0.017 (+0.912...+0.945)
 Double Decision confidence: 100.0%
 Take Decision confidence: 100.0%
 Duration: 2 minutes 52 seconds

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Position 5B:

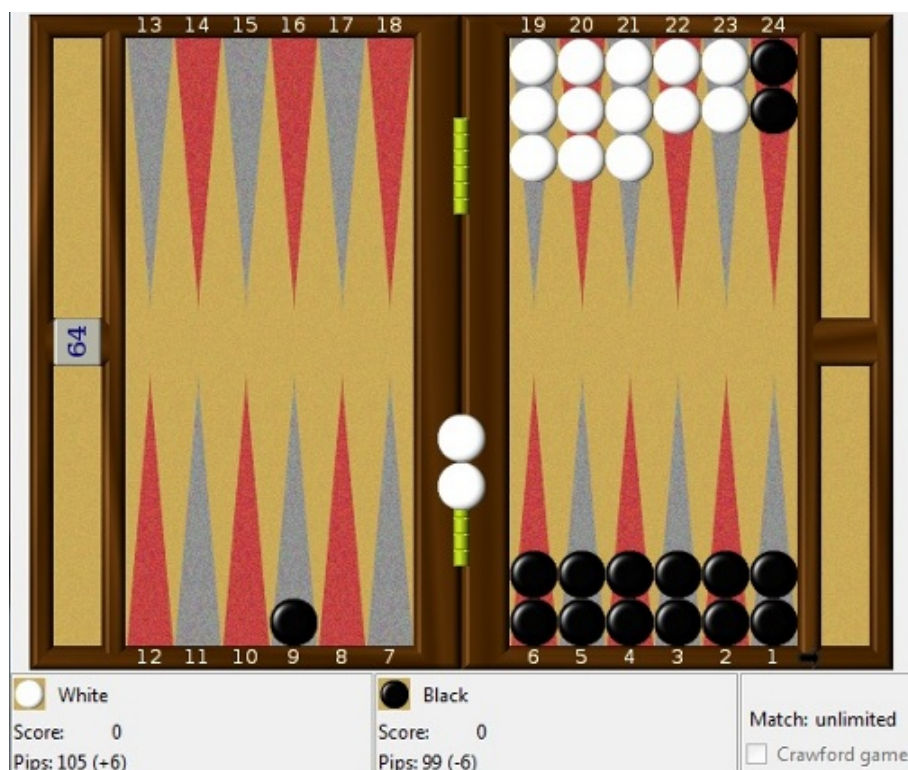


With 12 pips in the outfield, we have a borderline no redouble.

Analyzed in Rollout
 No Double
 Player Winning Chances: 61.92% (G: 20.85% B: 0.48%)
 Opponent Winning Chances: 38.08% (G: 8.18% B: 0.29%)
 Double/Take
 Player Winning Chances: 61.86% (G: 20.74% B: 0.47%)
 Opponent Winning Chances: 38.14% (G: 7.98% B: 0.31%)
 Cubeless Equities
 No Redouble: +0.367
 Redouble: +0.733
 Cubeful Equities
 No Redouble: +0.486
 Redouble/Take: +0.477 (-0.009)
 Redouble/Drop: +1.000 (+0.514)
 Best Cube action: No Redouble / Take
 Rollout details
 2592 Games rolled with Variance Reduction.
 Dice Seed: 134923
 Moves and cube decisions: 3 ply
 Confidence No Redouble: ± 0.006 (+0.480...+0.492)
 Confidence Redouble: ± 0.020 (+0.457...+0.497)
 Double Decision confidence: 80.0%
 Take Decision confidence: 100.0%
 Duration: 3 minutes 16 seconds

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Position 5C:



If we take away 3 pips timing then we have a borderline initial cube. My guess is a centered cube here is very rare.

Analyzed in Rollout

No Double

Player Winning Chances: 58.62% (G: 18.77% B: 0.39%)

Opponent Winning Chances: 41.38% (G: 8.97% B: 0.33%)

Double/Take

Player Winning Chances: 58.65% (G: 18.63% B: 0.40%)

Opponent Winning Chances: 41.35% (G: 8.88% B: 0.33%)

Cubeless Equities

No Double: +0.271

Double: +0.542

Cubeful Equities

No Double: +0.228 (-0.023)

Double/Take: +0.252

Double/Drop: +1.000 (+0.748)

Best Cube action: Double / Take

Rollout details

2592 Games rolled with Variance Reduction.

Dice Seed: 134923

Moves and cube decisions: 3 ply

Confidence No Double: ± 0.011 (+0.218...+0.239)

Confidence Double: ± 0.020 (+0.231...+0.272)

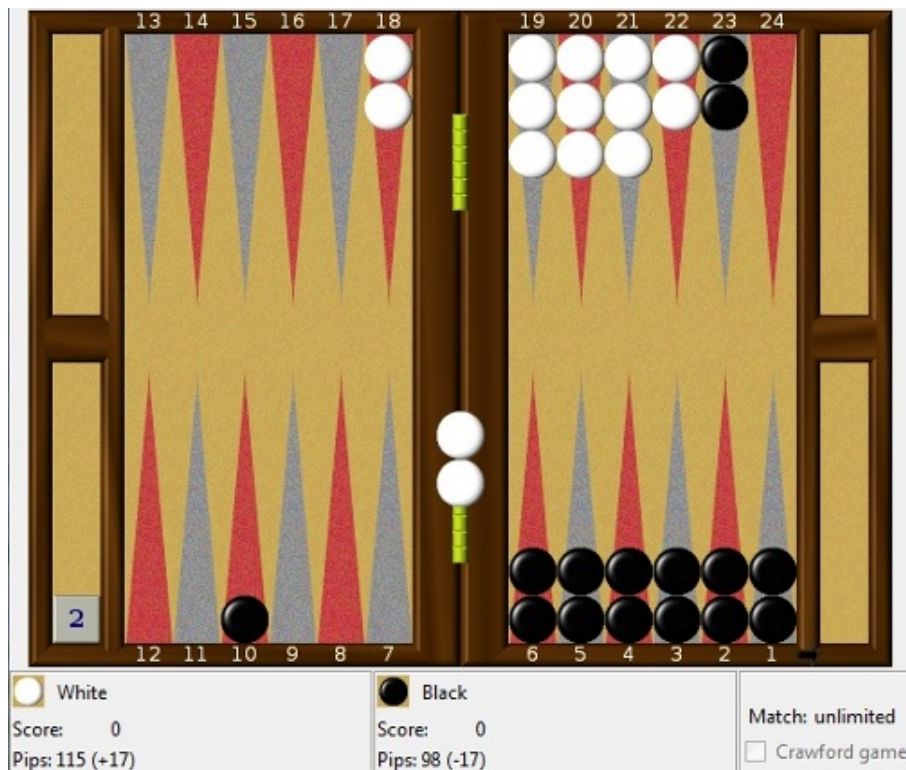
Double Decision confidence: 97.5%

Take Decision confidence: 100.0%

Duration: 4 minutes 42 seconds

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Position 5D:

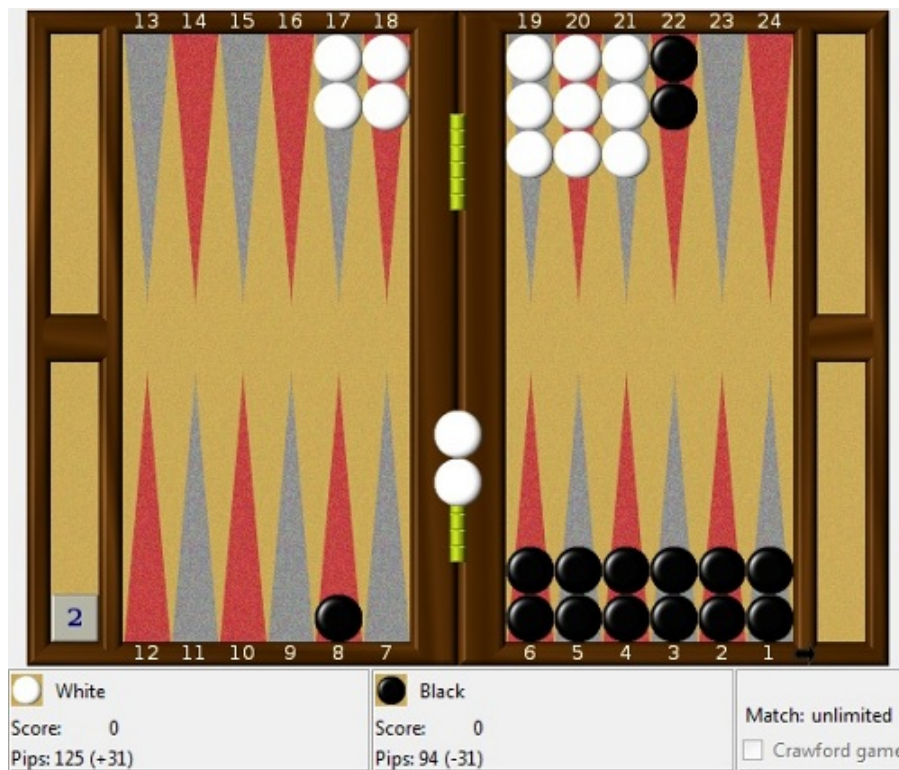


If we back the prime up a pip we can take away a couple of pips of timing and still have a borderline decision due to the increased gammons.

Analyzed in Rollout
No Double
Player Winning Chances: 61.06% (G: 25.20% B: 0.42%)
Opponent Winning Chances: 38.94% (G: 7.65% B: 0.29%)
Double/Take
Player Winning Chances: 61.53% (G: 25.08% B: 0.42%)
Opponent Winning Chances: 38.47% (G: 7.32% B: 0.28%)
Cubeless Equities
No Redouble: +0.398
Redouble: +0.819
Cubeful Equities
No Redouble: +0.512 (-0.009)
Redouble/Take: +0.522
Redouble/Drop: +1.000 (+0.478)
Best Cube action: Redouble / Take
Rollout details
2592 Games rolled with Variance Reduction.
Dice Seed: 134923
Moves and cube decisions: 3 ply
Confidence No Redouble: ± 0.006 (+0.507...+0.518)
Confidence Redouble: ± 0.013 (+0.508...+0.535)
Double Decision confidence: 89.8%
Take Decision confidence: 100.0%
Duration: 6 minutes 26 seconds

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Position 5E:



Backing up the prime one more pip and taking away 2 pips timing gives us another borderline decision.

Analyzed in Rollout

No Double

Player Winning Chances: 61.08% (G: 31.10% B: 0.33%)

Opponent Winning Chances: 38.92% (G: 7.53% B: 0.24%)

Double/Take

Player Winning Chances: 60.97% (G: 30.72% B: 0.34%)

Opponent Winning Chances: 39.03% (G: 7.59% B: 0.29%)

Cubeless Equities

No Redouble: +0.458

Redouble: +0.903

Cubeful Equities

No Redouble: +0.547

Redouble/Take: +0.547 (-0.001)

Redouble/Drop: +1.000 (+0.453)

Best Cube action: No Redouble / Take

Rollout details

2592 Games rolled with Variance Reduction.

Dice Seed: 134923

Moves and cube decisions: 3 ply

Confidence No Redouble: ± 0.006 (+0.541...+0.554)

Confidence Redouble: ± 0.015 (+0.531...+0.562)

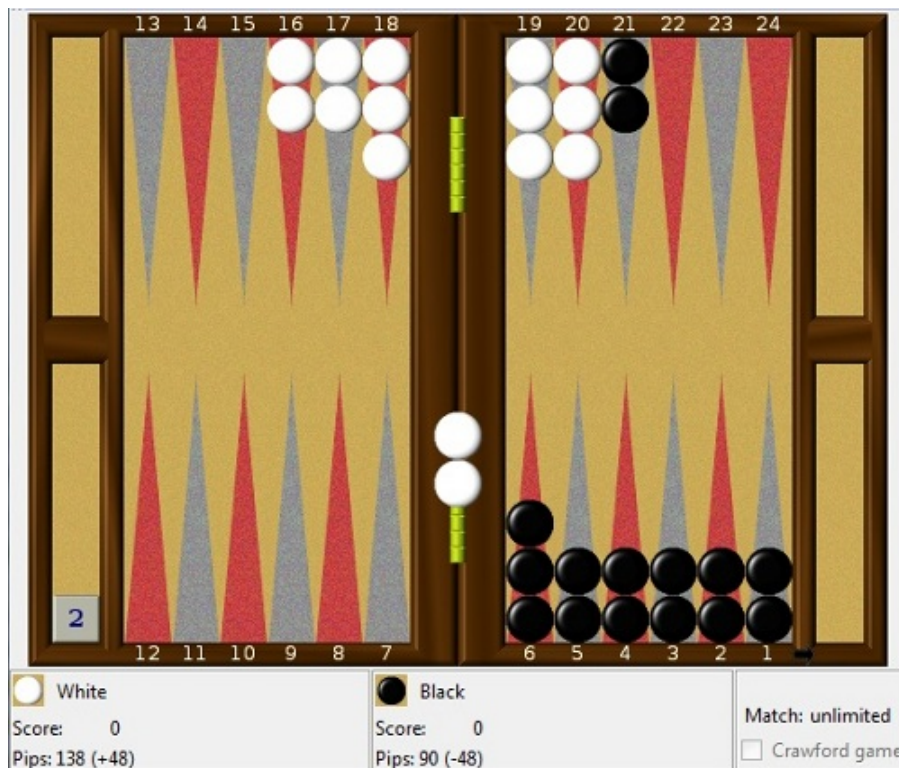
Double Decision confidence: 54.2%

Take Decision confidence: 100.0%

Duration: 8 minutes 07 seconds

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Position 5F:

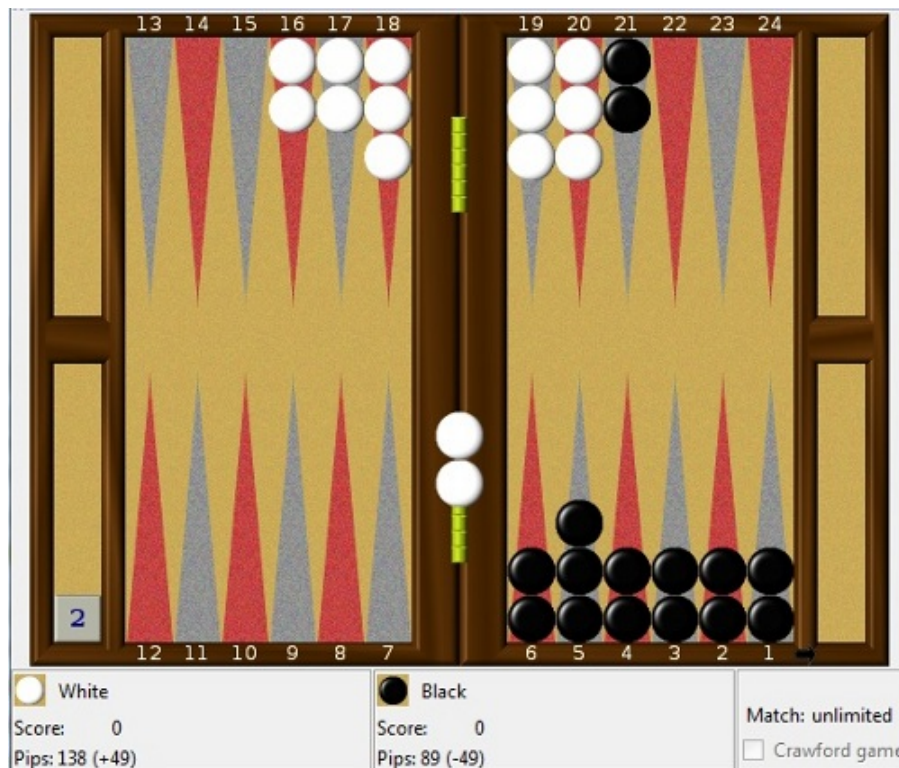


What if we back up the prime one more pip? Doesn't happen too often, but maybe we can understand something about the nature of the position. Again, being one pip further back is worth about 2 pips of timing in the outfield.

Analyzed in Rollout
 No Double
 Player Winning Chances: 58.01% (G: 37.35% B: 0.23%)
 Opponent Winning Chances: 41.99% (G: 7.93% B: 0.29%)
 Double/Take
 Player Winning Chances: 58.43% (G: 37.47% B: 0.22%)
 Opponent Winning Chances: 41.57% (G: 8.29% B: 0.28%)
 Cubeless Equities
 No Redouble: +0.454
 Redouble: +0.920
 Cubeful Equities
 No Redouble: +0.533
 Redouble/Take: +0.521 (-0.012)
 Redouble/Drop: +1.000 (+0.467)
 Best Cube action: No Redouble / Take
 Rollout details
 2592 Games rolled with Variance Reduction.
 Dice Seed: 134923
 Moves and cube decisions: 3 ply
 Confidence No Redouble: ± 0.009 (+0.524...+0.541)
 Confidence Redouble: ± 0.018 (+0.503...+0.539)
 Double Decision confidence: 88.6%
 Take Decision confidence: 100.0%
 Duration: 15 minutes 54 seconds

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Position 5G:



But let's remember that the 6 point is one of the worst places to have a checker with very little timing. What if we advance it one pip to the 5 point? Note that although we ostensibly **lose** a pip of timing, it goes from a borderline no redouble to a borderline redouble.

Analyzed in Rollout

No Double

Player Winning Chances: 58.79% (G: 36.43% B: 0.19%)

Opponent Winning Chances: 41.21% (G: 7.47% B: 0.25%)

Double/Take

Player Winning Chances: 59.41% (G: 37.29% B: 0.20%)

Opponent Winning Chances: 40.59% (G: 7.89% B: 0.24%)

Cubeless Equities

No Redouble: +0.465

Redouble: +0.964

Cubeful Equities

No Redouble: +0.541 (-0.027)

Redouble/Take: +0.567

Redouble/Drop: +1.000 (+0.433)

Best Cube action: Redouble / Take

Rollout details

2592 Games rolled with Variance Reduction.

Dice Seed: 134923

Moves and cube decisions: 3 ply

Confidence No Redouble: ± 0.009 (+0.531...+0.550)

Confidence Redouble: ± 0.018 (+0.550...+0.585)

Double Decision confidence: 99.6%

Take Decision confidence: 100.0%

Duration: 16 minutes 01 second

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Lessons:

With one checker to leap a perfect prime vs. one on the bar, 6 pips is the point of initial cube, 9 pips is the point of redouble, and 20 pips is the point of pass (6/9/20, or 5/8/19 by traditional counting). With two checkers to leap a perfect prime vs. two on the bar, 12 pips is the point of last redouble (11 by traditional counting).

Having more checkers back than the opponent is a major disadvantage.

Blot count can make a huge difference in prime vs. prime positions, and can increase the volatility and sensitivity to timing considerations.

For each pip further back the prime is with 2 checkers at the edge, compensate by taking away about 2 pips of timing.

The best place for a spare checker, especially if you don't have very much timing, is the 5 point. In some cases it may even be better to take **away** a pip of timing to advance the spare to the 5 point.

Next month, we'll look at cube action with checkers that are not at the edge, and where the side cubing has an impure position.

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