Isolation Heuristic Analysis

Number of Matches = 10

1 - custom_score( ) = **own_moves - (2 * opponent_moves) * filled_spaces**
This heuristic subtracts our own_moves by 2 times the opponent's moves and then multiplies it by the number of filled_spaces. This heuristic measures how many moves we have left and then maximizes the score by the context of how many spaces are unavailable.

2 - custom_score2( ) = **own_moves - (1.5 * opponent_moves)**
This heuristic is inspired by one video of the udacity lectures which strategizes along the thought of "chasing" your opponent by assigning a heavier weight to the number of moves he's got left.

3 - custom_score3( ) = **own_moves - opponent_moves / blank_spaces**
This heuristic returns the remainder of the amount of our available moves divided by the number of available spaces. The aim of this heuristic is to maximize our moves while minimizing our opponent's and then bring the resulting score into context by dividing it by the number of remaining available spaces.

Best Heuristic = **own_moves - (2 * opponent_moves) * filled_spaces**

Match #	Opponent	AB_Improved		AB_Custom		AB_Custom_2		AB_Custom_3	
		Won	Lost	Won	Lost	Won	Lost	Won	Lost
1	Random	18	2	18	2	20	0	18	2
2	MM_Open	19	1	13	7	16	4	13	7
3	MM_Center	16	4	20	0	18	2	16	4
4	MM_Improved	16	4	14	6	12	8	13	7
5	AB_Open	9	11	11	9	9	11	10	10
6	AB_Center	9	11	10	10	12	8	13	7
7	AB_Improved	9	11	11	9	7	13	12	8
	Win Rate:	68.6%		69.3%		67.1%		67.9%	

This heuristic performed better than the other 2 heuristics and averaged 1% to 2% points higher than the Improved agent. The reason why it does I think comes down to the following 3 reasons:

1 - The core of this heuristic is the subtraction of our moves by the opponent's. This rewards maximizing the player's moves and minimizing the opponent's moves.

2 - It compounds the subtraction mentioned above by multiplying by a factor of 2 the number opponent moves, this aims to pay closer attention to the opponent's moves. As they saying goes, keep your friends close but your enemies closer.

3 - By multiplying the subtraction result by the number of filled spaces our score gets amplified by the context of how many spaces are used up.