Heuristic Analysis

My experiment settings:

Custom_score: 2*#my_move - #opp_move

Custom_score_2: #my_move - 2*#opp_move

Custom_score_3: score(#my_move) – score(#opp_move)

The above score is defined as {0:-inf, 1:0, 2:0.5, 3: 1, 4:2, 5:2, 6:2, 7:2, 8:2}

Because of the randomness in game initiation, I set the number of matches to 50 in order to observe a more significant result.

Experiment Results:

Win Percentage	AB_Improved	AB_Custom	AB_Custom_2	AB_Custom_3
Random	85	83	82	84
MM_open	64	67	63	65
MM_Center	82	69	80	72
MM_Improved	63	62	58	61
AB_Open	53	47	47	55
AB_Center	59	55	53	55
AB_Improved	44	57	50	49

The results show AB strategy have clear advantage over MM, however, the different heuristics don't differ too much compare to each other.

Discussion:

Compare to standard isolation that one can move like a queen, in this game one can only move L-shape. Therefore, the situation of separation will never happen. In addition, the next move is at most 8, so one player can be easier to forfeit at early stage. In addition, it's also difficult say which position, for example middle, corner, or edge, is better. Therefore, a weighted strategy is also difficult to develop.

I'll pick up the AB_Custom as final evaluation function. First, it has slightly better winning rate compare to others. Second, its win percentage is more stable compare to others, which means it might be more robust to random initiation. Third, compared last Custom_score_3, it's slightly faster.