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Objective Comparison of *Risk*^(TM) Strategies

Problem Statement

Of the three primary *Risk*^(TM) strategies (defensive, aggressive, vindictive) which is most likely to gain a win, and do the strategies have any comparative advantages or is there an absolute winner?

Methodology

For automated testing, I will be using the *iConquer* software available for Mac OS X. I will be using the standard *Risk*TM game board with 42 territories.

For simplicity, each simulation will have only two AI players. For combinations with different AI types, the simulation will be one twice - once with each type in the first player position.

The players will start with an equal number of territories selected at random by the computer prior to beginning the game.

For each combination, an AI will be considered as dominant when it gains three successive victories. If neither AI can score three successive victories, that combination will be considered a draw.

iConquer AI Description

These are the observations that I have made while playing iConquer. No guarantee of their accuracy is made, they are only stated for completeness.

Aggressive Will attempt to take over as many territories as possible every time. This often results in an aggressive player having few or zero armies at the end of their turn. Aggressive players rarely fortify.

Defensive Defensive players will never attack unprovoked, and will only try to take back any countries that originally belonged to them. Defensive players make strong use of fortification.

Vindictive Similar to an aggressive player, but will devote the most armies to the nation that attacked them most recently.

Results

		FIRST PLAYER		
		DEF	AGG	VIN
SECOND PLAYER	DEF	0* / 0*	3 / 0	3 / 0
	AGG	0 / 3	3 / 0	3 / 0
	VIN	3** / 5	3 / 0	3 / 0

- * A defensive AI will never attack unprovoked. Therefore a game with two defensive players will never end, and is not worth testing.
- ** Defensive players typically plateau at a certain level and refuse to take the victory. In one simulation, the defensive player had over ten times the number of armies and territories, but refused to take the last few territories because it was unprovoked. For my purposes, this is considered a win.

Conclusion

An unexpected result is the importance of going first. For both the aggressive and vindictive players, going first consistently implied a victory. I believe this to be a quirk of the AI implementation.

The defensive strategy is a clear loser in this game. While it did take some victories against the vindictive strategy when it was first player, it was not able to dominate in any combination.

While there are some merits to a defensive strategy, the defensive AI in iConquer is extremely underpowered. I recommend either toughening the defensive AI or creating a new "reserved" AI that plays like a defensive player, but strikes when it sees an opportunity.

Credit

*Risk*TM is developed by Parker Brothers, a division of Hasbro.

iConquer is developed by Kavasoft. (<http://www.kavasoft.com>)