A Ludii analysis of the French Military Game

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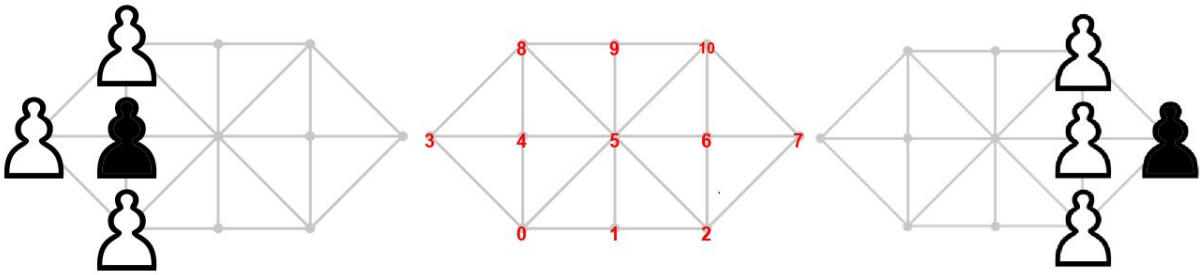

The French Military Game was described and analyzed for the first time by Édouard Lucas (1842 - 1891), in an article published in 1887 in *La Nature*. According to him, the Military Game was in vogue in the military circles at that time, since the game was designed by Louis Dyen, a retired sub-lieutenant, during his spare time. The officers' journal (*Bulletin de la réunion des officiers*) of August 1886 claimed that the game gives a clear idea of the strategic maneuvers used by three cavalry brigades to cut the communication of a member of the army.

The game is played on a board composed of 12 isosceles triangles, which form 11 stations and 22 lines connecting the stations. Three white towers and one black army corps are placed on the board in an initial specific position. White wins if they manage to encircle Black; otherwise, if after a number of moves - determined in advance - White has not blocked the army, Black wins. White can move one tower at a time of one step forward, or diagonally forward or sideways, while Black can move one step in any direction.

In this work we are using the Ludii system (http://ludii.games/), a General Game System with the ability to analyse the strategic potential of games. Ludii currently includes more than 200 games, including several variants of the French Military Game.

In his analysis, Lucas stated that White can always win in at most 12 moves. Ludii confirms this statement, demonstrating that White can force a win with this sequence of moves (using the indices in the picture):
Move(4-5), Move(3-4), Move(5-10), Move(8-5), Move(10-6), Move(4-8), Move(6-2), Move(0-1), Move(2-7), Move(5-10), Move(7-6), Move(1-5), Move(6-2), Move(8-4), Move(2-6), Move(4-0), Move(6-2), Move(0-1), Move(2-7), Move(5-2), Move(7-6), Move(1-5), Move(6-7), Move(5-6).

Consequently, this automatic analysis of the French Military Game done by Ludii, can be used to prove certain mathematical properties of games. In the future, we plan to do similar types of analysis for many other traditional games in the context of the Digital Ludeme Project (http://ludeme.eu).