Pyloff

Pyloff is similar to Go, except that it's played with marbles which may stack up to form piles. A special capture rule is used to resolve potential problems with retrieving buried pieces after capture; captured pieces with any piece(s) resting directly upon them are not removed.

Rules

Players take turns placing a piece (marble) of their colour at any valid empty point. A point is valid if it is: 1) a board point, or 2) supported flatly by four existing pieces.

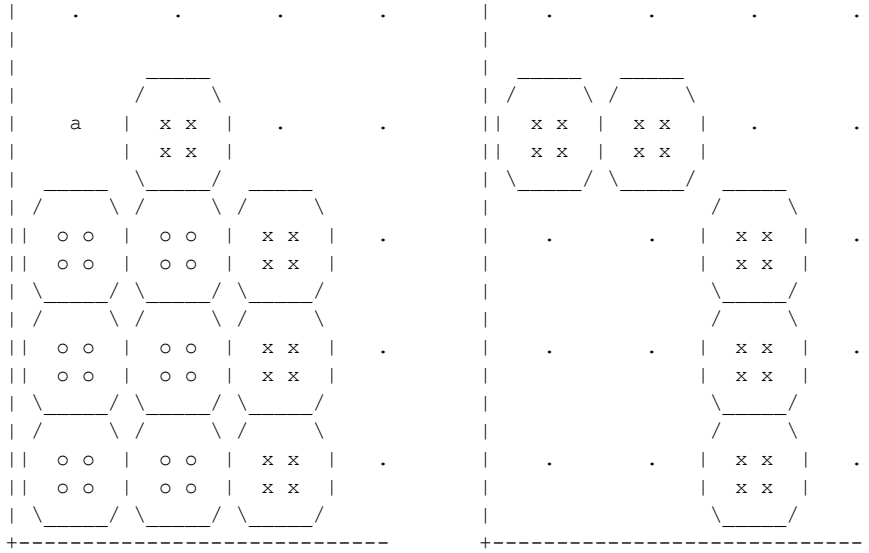
- ***Connection***: Two pieces of the same colour are connected if they are squarely adjacent to each other, or one rests directly upon the other. A group is a visibly connected set of pieces which may visit multiple levels.
- ***Freedom***: A piece has freedom if it is adjacent to at least one valid empty point on the same level. A group has freedom if at least one of its member pieces has freedom.
- ***Surround capture***: After playing a piece, all enemy groups without freedom are captured and removed from the board, except for pieces that directly support one or more higher-level pieces; these are not removed and remain alive in the game.
- ***No suicide rule***: It is not permitted to place a piece without freedom, unless that move captures neighbours to create its own freedom.
- ***Ko rule***: It is not permitted to repeat a previous board position (this has not been implemented so is up to the players' discretion).
- ***Over/under rule***: A connection passing over an enemy connection cuts it. Buried pieces (those with a piece directly above them) do not count in any connections; groups must be visibly connected.

Players may not voluntarily pass, but are forced to pass if there is no legal move.

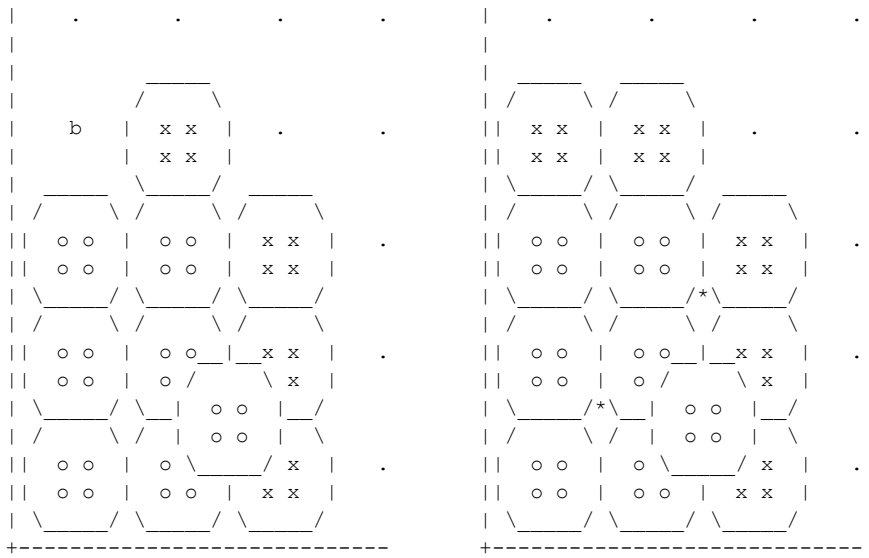
The game ends when neither player can make any further move. The player with the most pieces in play wins.

Examples

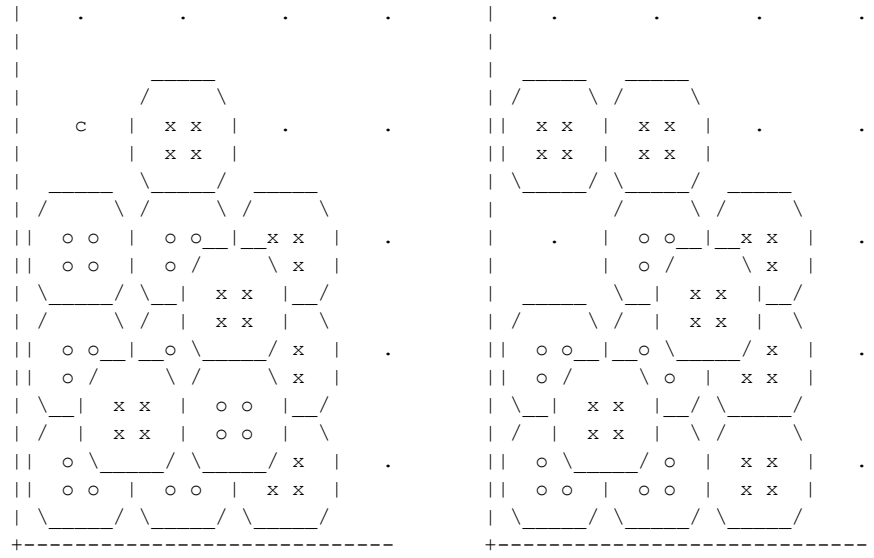
An X piece at 'a' captures the O group, which has no remaining freedoms.



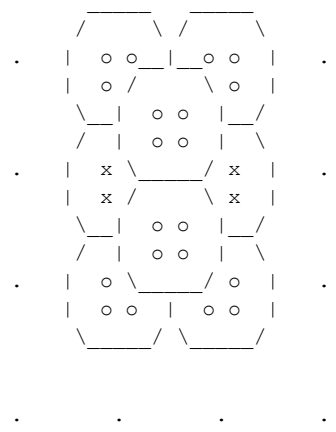
An X piece at 'b' does not capture the O group, as it still has two freedoms (marked '*') after the move.



An X piece at 'c' captures the O group. Note that the O pieces which support higher-level X pieces are not removed.



The O overpass cuts the following two X pieces (over/under rule).



Notes

Higher level plays are strong, as the lower-level pieces that support them remain fixed and cannot be removed from the board (unless the higher level pieces are themselves captured and removed).

It's relatively easy to make groups safe with multiple eyes on different levels. However, the fact that players cannot pass means that they may eventually be forced to fill in their own eyes and render groups unsafe.

Some eyes that initially appear safe may become unsafe as pieces build up around them offering opportunites to attack.

Adjacent friendly pieces on the outermost row or column of any level cannot be cut, as it's not possible to bury them or separate them with an overpass. Edge moves can therefore be quite strong (especially if they support higher-level pieces) despite the fact that the edge removes a potential freedom. Edge play becomes increasingly

predominant as the levels build up and the ratio of edge points to interior points increases.

Removing buried pieces from connection calculations means that players do not have to remember the colour of hidden pieces, except when it comes to counting the score at the end of the game.

The board, when fully stacked, forms a pyramidal or cannonball stacking. The maximum number of pieces that may be played on a board of size *n* is given by the pyramidal number $Pn = n\,(n + 1)\,(2n + 1) / 6$.

Board size	Max pieces
3x3	14
4x4	30
5x5	55
6x6	91
7x7	140
8x8	204
9x9	285
10x10	385
11x11	506
12x12	650
13x13	819
...	...
19x19	2,470

A game of Pyloff will therefore take several times as long as a game of Go on the same sized board. For example, a 10x10 Go board has room for 100 pieces whereas a 10x10 Pyloff board has room for 385 pieces (although these limits will never actually be reached).

Each ball in a cannonball stacking has up to twelve connected neighbours, however only the four squarely adjacent neighbours on the same level count as freedoms in Pyloff (as in Go), not diagonally adjacent neighbours on the next level up/down. This is for two main reasons:

1) It makes groups easier to surround (otherwise captures would rarely occur); and
2) It means that some members of surrounded groups may remain uncovered (otherwise only singleton captures would remove pieces from the board).

Some multiplayer Go variants relax the connection definition so that enemy groups may consist of stones of any colour except the current player's. Pyloff maintains the stricter definition - that any group may only consist of one colour - to encourage captures.

Translating Pyloff to the hexagonal grid is complicated by phase problems; for any packed level there are two ways to pack the level above, both of which are valid but incompatible. The square grid is better suited to ball-stacking games of this type.

History

The name Pyloff derives from the fact that pieces form piles and are taken off the board following capture. This is in contrast to the related game Pylon, in which captures result in pieces being added to the board.