

The Poker Squares Family: cards, letters, and hexes

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Outline

- Learn and play Poker Squares
- Generalize game concepts
- Learn and play two closely related games:
 - Word Squares
 - Take it Easy!
- Future Human vs. Machine Poker Squares Competition?
- Final Game Design Thoughts

Poker Squares

- Materials:
 - shuffled standard (French) 52-card card deck,
 - paper with 5-by-5 grid, and
 - pencil
- Each turn, a player draws a card and writes the card rank and suit in an empty grid position.
- After 25 turns, the grid is full and the player scores each grid row and column as a 5-card poker hand according to the American point system.

American Point System

| <u>Poker Hand</u> | <u>Points</u> | <u>Description</u> | <u>Example</u> |
|-------------------|---------------|--|---------------------|
| Royal Flush | 100 | A 10-J-Q-K-A sequence all of the same suit | 10♣, J♣, Q♣, K♣, A♣ |
| Straight Flush | 75 | Five cards in sequence all of the same suit | A♦, 2♦, 3♦, 4♦, 5♦ |
| Four of a Kind | 50 | Four cards of the same rank | 9♣, 9♦, 9♥, 9♠, 6♥ |
| Full House | 25 | Three cards of one rank with two cards of another rank | 7♠, 7♣, 7♦, 8♥, 8♠ |
| Flush | 20 | Five cards all of the same suit | A♥, 2♥, 3♥, 5♥, 8♥ |
| Straight | 15 | Five cards in sequence; Aces may be high or low but not both | 8♣, 9♠, 10♥, J♦, Q♣ |
| Three of a Kind | 10 | Three cards of the same rank | 2♠, 2♥, 2♦, 5♣, 7♠ |
| Two Pair | 5 | Two cards of one rank with two cards of another rank | 3♥, 3♦, 4♣, 4♠, A♣ |
| One Pair | 2 | Two cards of one rank | 5♦, 5♥, 9♣, Q♠, A♥ |
| High Card | 0 | None of the above | 2♦, 3♣, 5♠, 8♥, Q♦ |

Scoring Examples

PySol - Poker Square

File Select Edit Game Assist Options Help

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| | | |
|-----------------|-----|---|
| Royal Flush | 100 | 1 |
| Straight Flush | 75 | 0 |
| Four of a Kind | 50 | 0 |
| Full House | 25 | 2 |
| Flush | 20 | 3 |
| Straight | 15 | 0 |
| Three of a Kind | 10 | 1 |
| Two Pair | 5 | 1 |
| One Pair | 2 | 2 |

WON

Total: 229

100 20 20 20 2

1:38 25/25 147: 89/58

PySol - Poker Square

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| | | |
|-----------------|-----|---|
| Royal Flush | 100 | 0 |
| Straight Flush | 75 | 1 |
| Four of a Kind | 50 | 2 |
| Full House | 25 | 0 |
| Flush | 20 | 2 |
| Straight | 15 | 0 |
| Three of a Kind | 10 | 1 |
| Two Pair | 5 | 0 |
| One Pair | 2 | 2 |

WON

Total: 229

20 0 75 20 0

1:37 25/25 151: 92/59

Let's Play!

| <u>Poker Hand</u> | <u>Points</u> | <u>Description</u> | <u>Example</u> |
|-------------------|---------------|--|---------------------|
| Royal Flush | 100 | A 10-J-Q-K-A sequence all of the same suit | 10♣, J♣, Q♣, K♣, A♣ |
| Straight Flush | 75 | Five cards in sequence all of the same suit | A♦, 2♦, 3♦, 4♦, 5♦ |
| Four of a Kind | 50 | Four cards of the same rank | 9♣, 9♦, 9♥, 9♠, 6♥ |
| Full House | 25 | Three cards of one rank with two cards of another rank | 7♠, 7♣, 7♦, 8♥, 8♠ |
| Flush | 20 | Five cards all of the same suit | A♥, 2♥, 3♥, 5♥, 8♥ |
| Straight | 15 | Five cards in sequence; Aces may be high or low but not both | 8♣, 9♠, 10♥, J♦, Q♣ |
| Three of a Kind | 10 | Three cards of the same rank | 2♠, 2♥, 2♦, 5♣, 7♠ |
| Two Pair | 5 | Two cards of one rank with two cards of another rank | 3♥, 3♦, 4♣, 4♠, A♣ |
| One Pair | 2 | Two cards of one rank | 5♦, 5♥, 9♣, Q♠, A♥ |
| High Card | 0 | None of the above | 2♦, 3♣, 5♠, 8♥, Q♦ |

Strategy Discussion

PySol - Poker Square

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| | | |
|-----------------|-----|---|
| Royal Flush | 100 | 1 |
| Straight Flush | 75 | 0 |
| Four of a Kind | 50 | 0 |
| Full House | 25 | 2 |
| Flush | 20 | 3 |
| Straight | 15 | 0 |
| Three of a Kind | 10 | 1 |
| Two Pair | 5 | 1 |
| One Pair | 2 | 2 |

WON

Total: 229

100 20 20 20 2

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PySol - Poker Square

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0

| | | |
|-----------------|-----|---|
| Royal Flush | 100 | 0 |
| Straight Flush | 75 | 1 |
| Four of a Kind | 50 | 2 |
| Full House | 25 | 0 |
| Flush | 20 | 2 |
| Straight | 15 | 0 |
| Three of a Kind | 10 | 1 |
| Two Pair | 5 | 0 |
| One Pair | 2 | 2 |

WON

Total: 229

20 0 75 20 0

1:37 25/25 151: 92/59

Generalizing Poker Squares

- A random item (e.g. playing card) is announced to all.
- Each player independently places that same item into a grid (e.g. 5x5 square grid).
- These steps are repeated (e.g. until grids are full).
- The goal is to place the items so as to achieve the highest scoring configurations of items (e.g. poker hands).

Word Squares

a.k.a. Crosswords, Word Exchange, Stock Exchange

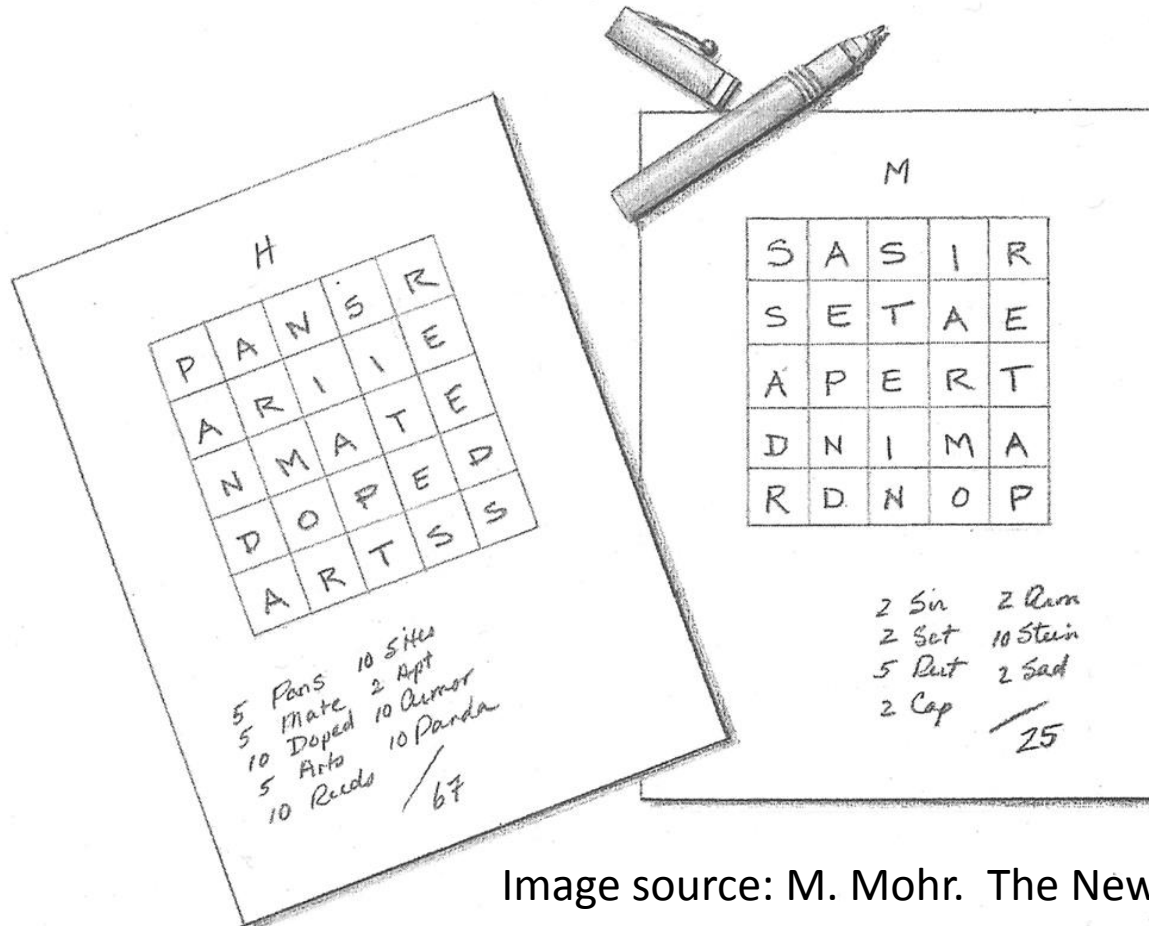


Image source: M. Mohr. The New Games Treasury

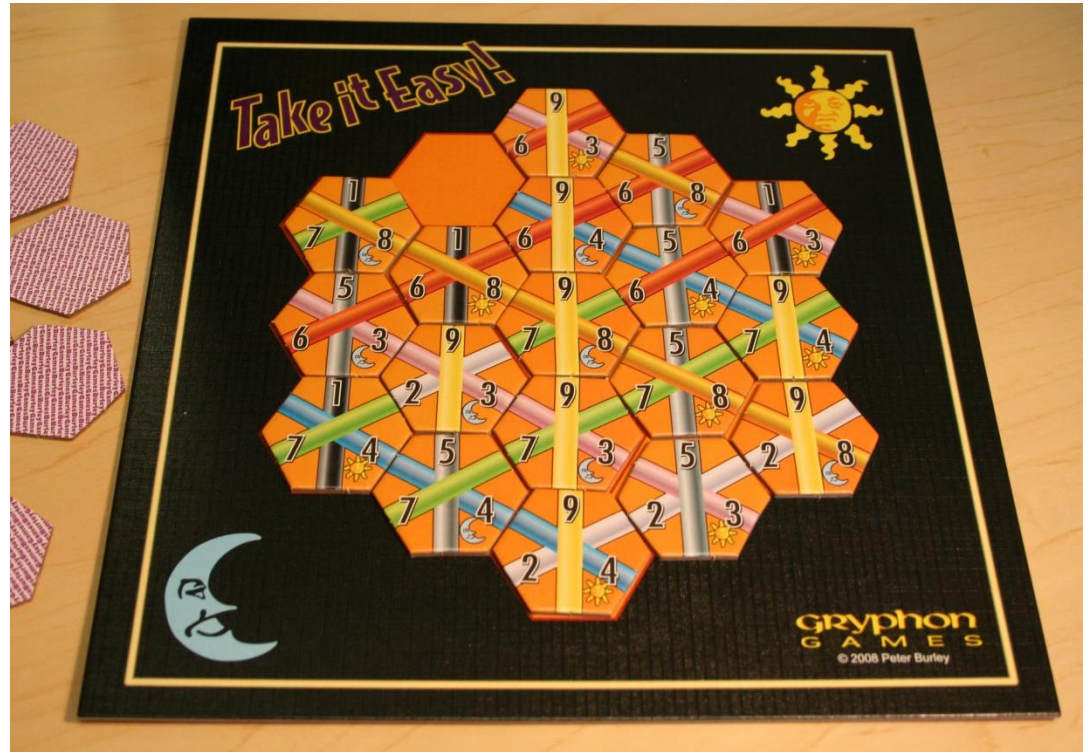
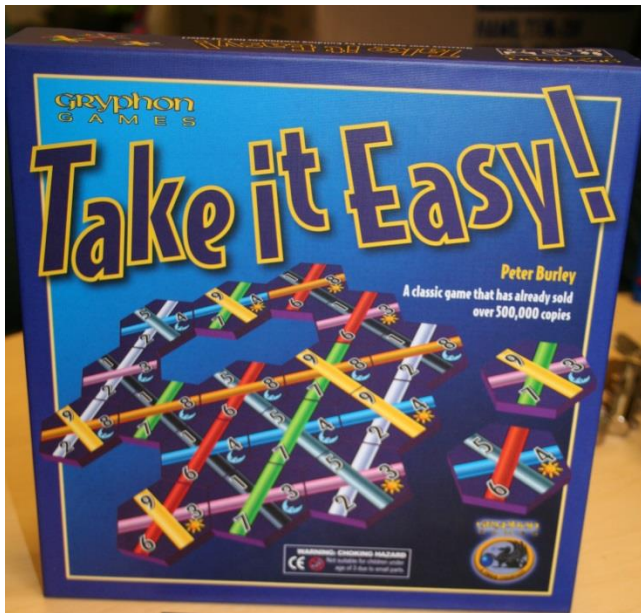
Word Squares General Overview

- A random **letter** is announced to all.
- Each player independently places that same **letter** into a **5x5 square grid**.
- These steps are repeated until grids are full.
- The goal is to place the **letters** so as to achieve the highest scoring **words**.

Word Squares Rules

- Each player has a pen and paper with a 5x5 grid.
- Players take turns choosing and announcing letters that each player must write into an empty grid space.
- After 25 turns, grids are scored for words formed across/down within rows/columns as follows:
 - 5 letters → 10 points; 4 letters → 5 points; 3 letters → 2 points
 - Words contained within other words do not count. E.g. one scoring TWINS cannot also score TWIN, WIN, WINS, and INS.
 - Overlapped words may score. E.g. a row/column with GAMEN would score both GAME and AMEN for $2 \times 5 = 10$ points.
 - As in other word games, challenges are allowed, so that players should agree upon word restrictions (e.g. 3-or-more-letter Scrabble words) and a dictionary (e.g. Scrabble player's dictionary) to check challenges.

Take it Easy!



Take it Easy! General Overview

- A random **hex tile with numbered, colored lines** is announced to all.
- Each player independently places that same **hex tile** into a **hexagonal hex grid with 3 hexes on a side**.
- These steps are repeated until grids are full.
- The goal is to place the **hex tiles** so as to achieve the highest scoring **completed single-color lines across the grid**.

Take it Easy! Rules

- Each of the 27 hex tiles has number, colored lines edge-to-edge through the tile center
 - Each color corresponds to a specific number 1-9.
 - There are 3 colors/numbers for each direction, and tiles must be oriented with numbers upright.
- Each player has the same 27 tiles. One player mixes his/her tiles facedown, drawing, announcing, and placing each tile into an empty grid space along with all other players.
- Once all 19 hexagonal hex grid spaces are full, scoring occurs. For each line of a single color that spans the entire grid, a player scores the number of tiles in the line multiplied by the line number (1-9).

Human Versus Machine Competition?

- Currently, 5 teams in the CS department are competing to create the best AI for Poker Squares.
- Might there possibly be interest in the Game Club having a future Human vs. Machine Poker Squares tournament?

Concluding Thoughts

- The difficult part of game design is creating good game mechanics.
- Once a good mechanic is devised, it can be applied in many ways.
 - In this case, the sequential placement optimization game (SPOG) mechanic served to create a Poker solitaire game, a word game, and a line formation game.
- Note that one can mutate designs both by adding and taking away constraints.
 - Example: Imagine removing a constraint that SPOG configurations must be along lines. What if one used a hex grid with different terrain/building types, with scoring according to adjacency of different tile types.

Resources and References

- Gettysburg College Poker Squares Page:
<http://tinyurl.com/pokersqrs>
 - References
 - Rules and play grids
- Word Squares:
 - Marilyn Simonds Mohr, [The New Games Treasury](#), 1997.
 - <http://boardgamegeek.com/boardgame/10210/word-squares>
- Take it Easy!:
 - <http://boardgamegeek.com/boardgame/128/take-it-easy>