Strands: a real strategy game my toddler plays, designed with AI

Nick Bentley Game Design, My Best Games July 5, 2022

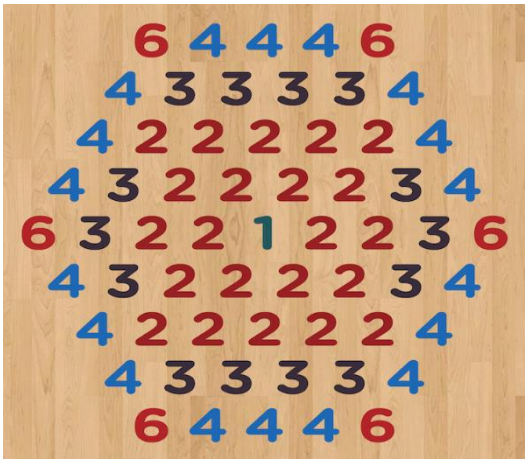
Strands is a minimalist game where you choose between making a few big moves or many small ones.

"Strands has a wonderfully simple set of rules, but creates an incredibly deep emergent decision tree. Its rules are so simple it can be taught to children in minutes in its entirety. It's amazing, for how simple the rules are, how much one can look ahead into their strategy. I was very impressed with this game. It is in a word: Elegant." – Emerson Matsuuchi, designer of Century: Spice Road

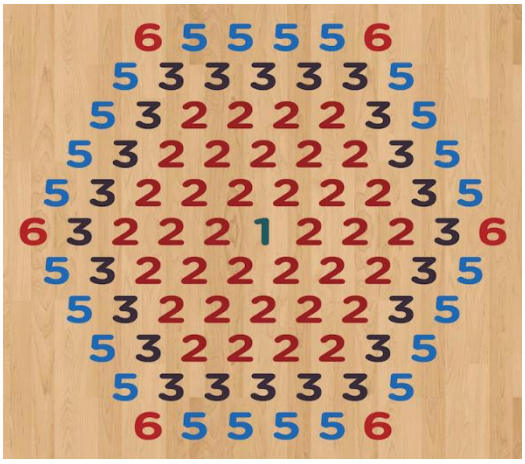
The rules are two tweets long, so I'll present them first, then discuss its design.

Boards

Strands can be played on many boards. Here are the two main ones at the moment. One for kids and those inexperienced with games:



...and one for game enthusiasts:



Rules

The board starts empty. One player has white stones, the other black.

1. To start, Black covers any space marked “2”.
2. From then on, starting with White, the players take turns. On your turn, cover up to X empty spaces marked “X”. For example, you could cover any 3 empty spaces marked “3”.
3. The game ends when the board’s full. The player with largest contiguous group of stones wins. If tied, compare the players’ second-largest groups, and so on, until you come to a pair which aren’t the same size. Whoever owns the larger wins.

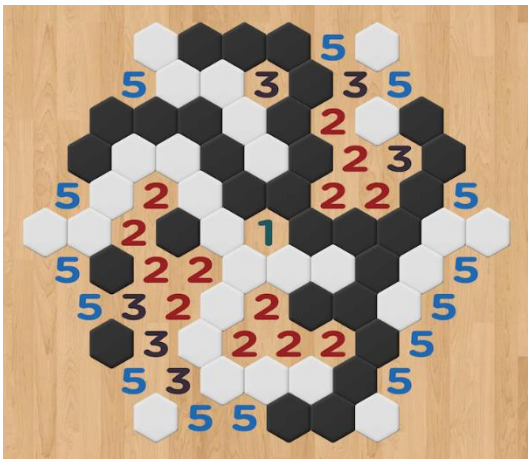
The Main Strategic Dilemma

Placing pieces near the center of the board gives you the best position, but placing near the edges allows you to place more pieces. The key is navigating this tradeoff.

Add your email here to be notified when Strands launches on Kickstarter

Ensure each player has a 50% chance of winning

To give each player a 50% chance of winning, record the scores after each game. To win the next game, the last game’s winner must finish with the same or larger score-difference. Otherwise she loses.



A more accessible game?

Playtesters have said Strands is my most accessible abstract game. That surprised me because:

- I struggle to make accessible abstract games.
- There are lots of ways to take each turn (up to ~3500 on the small board and ~130,000 on the large), which can make games inaccessible.

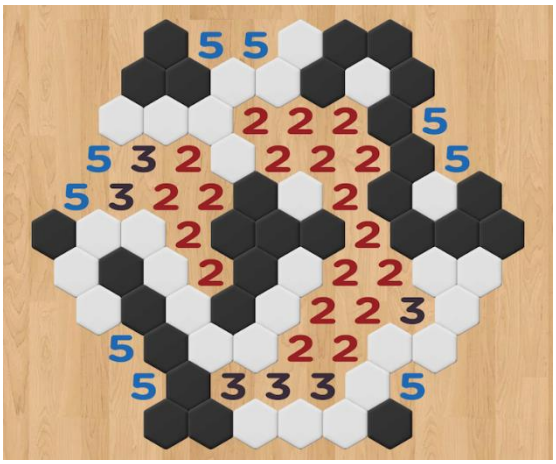
In playtests, the board appears to play a key role. Because it's divided into regions, players can make decisions at a regional level, allowing for educated guesses.

In your first games, you don't have to think "which of these 3500 options should I take?". Instead you can think "which number should I cover?" There are 5 possible answers (1,2,3,4,6 on the small board, and 1,2,3,5,6 on the big board). Once you pick that, your remaining options feel manageable.

The board also makes the main strategic dilemma visually obvious:

Should you place a few powerful stones near the center, or more but weaker stones near the edge?

...so the board telegraphs strategy.



These considerations suggest two design heuristics:

- You can make complex spatial games more accessible by visually segmenting a large number of options into a small number of meaningfully differentiated categories.
- You might be able to make a game more accessible by embedding the main strategic dilemma visually in the game's components.

Strands' accessibility grew clear to me when my 2-year-old saw it and asked me to teach him. In his first game he understood the win condition and how to take a turn, thanks to those category-level decisions. In fact those were the only decisions he understood. We've played it about 30 times since, at his request.

I've never before made a real strategy game that can be played by someone so young.

Design Story

One of my most popular abstract games is called Catchup:

Catchup has the same win condition as Strands: to make the biggest connected group. In play, when you grow your largest group so it's as large or larger than your opponent's, she can add an extra stone on her next turn (the "catchup" rule).

This creates a tension where you want to grow your groups, but selectively, so you don't help your opponent grow too much.

Though I'm proud of Catchup, there's something I wish I could change: when you play face-to-face, you often have to pause and count pieces, so you can track group size on a scoring track (in online play, the counting is done for you).

Strands is an attempt to make a similar game without face-to-face in-game counting. Having played Catchup ~15,000 times (I've tracked it), I have knowledge that might help me design other games with the biggest-group goal. I believe it's special, for reasons too complicated to explain here.

The Key Design Challenge

There's a reason it's hard to make games with the biggest-group goal: it makes the board's central spaces much more powerful than edge spaces. To make a good game, one must equalize them, among other things.

How could I do that in a new way?

In hunting for a solution, I wanted to honor a second idea:

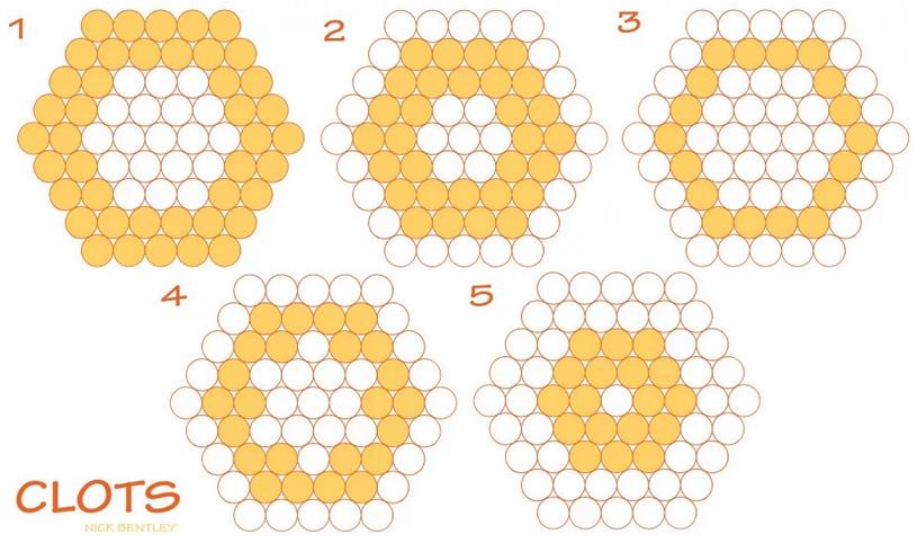
For a biggest-group game to be at its best, players should place variable numbers of stones each turn. Otherwise the same player will always have the tie-breaker (because one player will always end up with more stones on the board than the other). That would feel imbalanced.

So the two constraints I wanted to explore were:

- equalize the value of the board's center and edge

- allow players to choose the number of stones they play each turn

In formulating them, I realized I'd already had an undeveloped idea from 2011 which somewhat satisfied them, called Clots:



In Clots, you can place 1 stone in the central region of the board, or 2 on the next ring out, or 3 on the ring outside that.

Clots somewhat equalized center and periphery by letting you place more stones on the periphery.

So I tested Clots, and I thought I felt a spark of something. I had fun even though center and edge weren't fully equalized on any of the boards. So I decided to develop it

To do it right, I needed someone with programming skills. So I contacted Tysen Streib, an AI developer who'd made the AI for my game Catchup. I asked him if he'd be like to write an AI to help solve the problem (I knew he could create a strong one because of his Catchup AI). The idea was to have the AI play against itself on many different boards, and then measure, from the AI's placements, which boards had the most uniformly valued spaces.

Tysen was interested, so we did it, and it yielded the boards you see at the top of this post. Then I playtested the results. Some playtesters were folks who who had played, and struggled, with my other games.

Those testers have been unanimous in saying Strands is my most accessible abstract game.

I've put it on Board Game Arena to see if players there like it. If you try it, I'd love it if you left your reactions below. We've included several different boards there as well, so you can see how they feel. I'd love to know which you like.