

# About the G4G15 logo – Scott Kim



*Final logo*

The Gathering 4 Gardner is a biannual conference that honors science writer Martin Gardner. I have designed every conference logo since G4G5. Each logo is a visual puzzle based on the number — the G4G5 logo was a five-pointed star, and G4G6 was a cube (with six faces).

The G4G13 and G4G14 logos were both based on mathematical number patterns, so I figured it was time to showcase another area of interest for Gardner fans.

Spoiler alert: before I describe the origin of the G4G15 logo, you may want to try figure it out yourself. What does this logo have to do with the number 15? What famous puzzle does it refer to? What is the implicit challenge in this logo, why is that interesting, and how can it be solved?

Here's the answer. The 15 puzzle, as chronicled in Jerry Slocum and Dic Sonneveld's sumptuous book *The 15 Puzzle*, was a sliding block puzzle that became an international craze in 1880.



The puzzle presented the 15 numbers in order in a square tray, except with the final 14 and 15 reversed.

The earliest version of the 15 puzzle was invented by Noyes Palmer Chapman in 1874. American puzzle designer Sam Loyd later stole credit for the puzzle, and offered a big prize for anyone who could solve it.

G	A	T	H	E
R	I	N	G	4
G	A	R	D	
N	R	E		

*Early draft*

His money was safe — reversing two adjacent squares is mathematically impossible unless you remove tiles from the tray and put them back in.

When I approached the G4G15 logo, I knew that I wanted to base it on the 15 puzzle. The letters of GATHERING 4 GARDNER 15 fit well into the space, requiring only a few doubled letters. So far so good.

In keeping with the original puzzle, I reversed the final 2 letters of GARDNER, which makes the viewer want to reverse those two letters. But as most G4G attendees will know, that's impossible. So my challenge became to design a visually attractive puzzle that DID allow for an interesting, unique solution.

I tried many ideas. To prototype my solutions, I used an online 15 puzzle generator (<https://ruwix.com/online-puzzle-simulators/sliding-15-puzz/>). But the early draft, shown above, allows many solutions (you can swap the final R and E if you, say, also swap the two G's), and is visually dull.

The breakthrough came when I pondered how to include the number 15. I hit on the idea of making it cover the background. Then everything fell in place.

My challenge now was to design the 15 so the final R and E had identical, and therefore swappable, backgrounds, as did one other pair of tiles. It turned out that the best solution was to have three matching tiles. I would have preferred a second matching pair with a different background, but that didn't work out. The puzzle requirements also drove me to use gradients on the background tiles. Thus are the ups and downs of driving a visual design with mathematics!