

Representing Balanced Ternary numbers visually

Image

I'm not sure yet what this will mean in-universe, but I've thought of a way of representing balanced ternary numbers in 2 dimensions. Here are the rules:

1. You draw a dot as your starting point.
2. Start drawing a line in any cardinal direction.
3. You may turn 90 degrees clockwise or counterclockwise, drawing a new dot at each turn.
4. You may go straight ahead, drawing another dot dividing the line segment.
5. You may not turn 180 degrees on a single node, you must make two consecutive 90-degree turns.

How does this represent balanced ternary numbers? A counterclockwise turn represents a +1, straight represents 0, and a clockwise turn represents -1. The digits are big-endian, that is, the first turn represents the highest-order trit, the second is the second-highest-order trit, and so on. Since you start off going straight, you can consider it an insignificant leading zero. Neither starting direction nor line-length are significant, so your choices in that regard can be governed by aesthetics or other constraints. Mirroring the image results in a number of the opposite sign, as does traversing the path backwards.

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