Expand-Boundary Conditions

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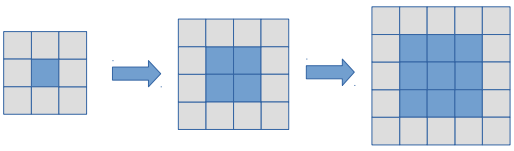
A Generalized Pascal's Triangle is used to study Path Reference Classes. One natural interpretation of boundary conditions is called "odd-boundary conditions". In this paper I suggest another natural interpretation called "expand-boundary conditions".



An expand-boundary condition adds a boundary for every layer. This has the property that the boundary does not depend on previous non-boundary cells. It can depend on the previous boundary.

Expand-boundary conditions assumes that the grid is infinite when the automaton integrates to infinity.

Any large closed grid can be interpreted as expand-boundary conditions of finite time steps by starting with a single cell in the middle of the grid. The value of this cell does not matter, as long it is non-zero.

A natural initial condition is to start with some non-zero value in a single cell and use zero for expand-boundary conditions. This is because in a Path Reference Class, one assumes that observers come into existence at some point or some state, instead of existing someplaces everywhere initially.

This naive interpretation means that there is only one solution per dimension, for every unconstrained Generalized Pascal's Triangle. This solution converges toward a normal distribution.

Where odd-boundary conditions affect the integration over time to converge, allowing some variation, the expand-boundary conditions has a natural interpretation which is the same for all times, only depending on the dimension of the grid. With other words, expand-boundary conditions are very boring in comparison to odd-boundary conditions.

The only mechanism that can produce variations under the natural interpretation of expand-bounary conditions is by adding constraints.

An alternative is to modify the rule of summing paths to include some kind of noise.

The question that remains is whether there exists some natural interpretation of how constraints come about, or whether some kind of noise can be interpreted naturally.