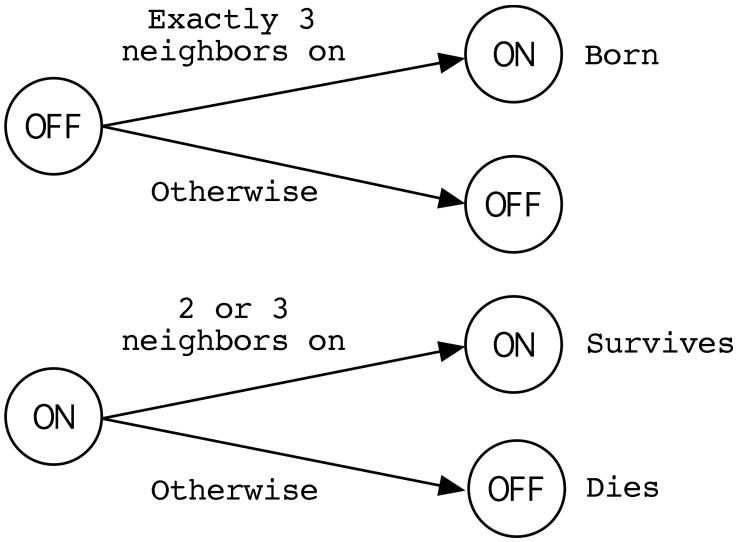
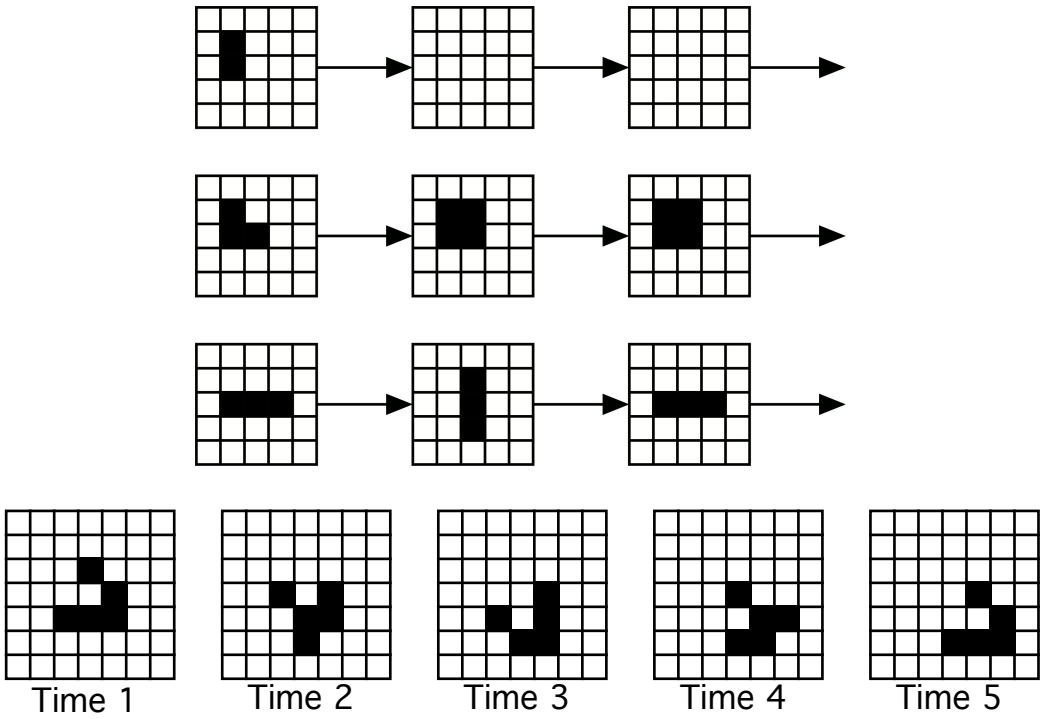
The Game of Life

1. The Rules



2. Some Patterns



3. The Ultimate Natural Law for the Game of Life

Current State \ Sum of Neighbor States	0	1	2	3	4	5	6	7	8
1	0	0	1	1	0	0	0	0	0
0	0	0	0	1	0	0	0	0	0

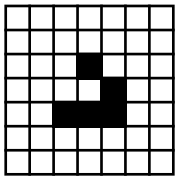
This table has 18 different boxes. There are two ways to fill in each box (either with 0 or with 1). So there are $2^{18} = 262144$ ways to fill in this table.

4. Different Versions of the Game of Life

Rule Description and Name | Moving Pattern | Comments

Rule B3/S23 (John Conway's Life)

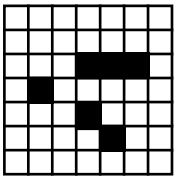
Current State \ Sum of Neighbor States	0	1	2	3	4	5	6	7	8
0	0	0	0	1	0	0	0	0	0
1	0	0	1	1	0	0	0	0	0



Very rich physics; has patterns that are universal computers; has self-reproducing patterns.

Rule B36/S125 (Alan Hensel's Life)

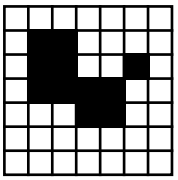
Current State \ Sum of Neighbor States	0	1	2	3	4	5	6	7	8
0	0	0	0	1	0	0	1	0	0
1	0	1	1	0	0	1	0	0	0



Very rich physics; I don't know if Hensel's shown his rule to have universal computers or self-reproducing patterns.

Rule B37/S135 (Eric Steinhart's Life)

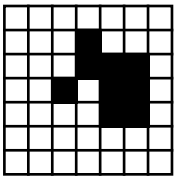
Current State \ Sum of Neighbor States	0	1	2	3	4	5	6	7	8
0	0	0	0	1	0	0	0	1	0
1	0	1	0	1	0	1	0	0	0



My own rule; a variant of Hensel's B36/S135; has fairly rich physics, I don't know if it has universal computers or self-reproducing patterns.

Rule B36/S35

Current State \ Sum of Neighbor States	0	1	2	3	4	5	6	7	8
0	0	0	0	1	0	0	1	0	0
1	0	0	0	1	0	1	0	0	0



Seems to have almost no physics at all; but it does have a moving pattern. A degenerate world.