

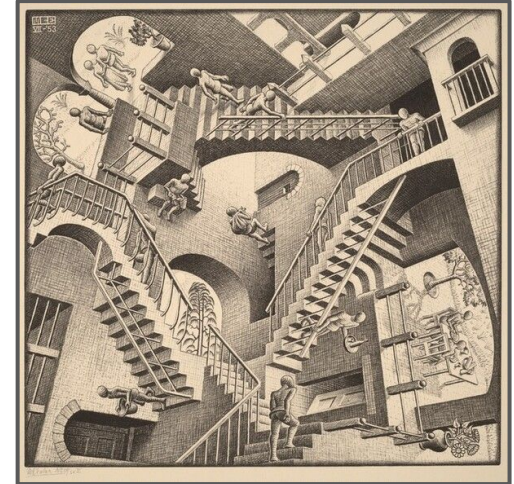
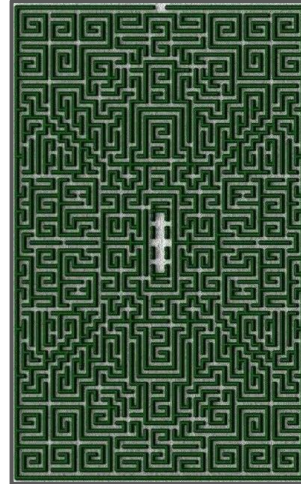
Code the Universe

Lecture #5

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January @ Harvard GSAS

Mazes & Labyrinths

- Natural, if you're willing to squint
- A subject of interest across time, cultures, religions
 - Greek Mythology: King Minos' Labyrinth with Theseus
 - Indian Carvings: In Goa, > 4,500 years ago
 - Spirituality: Good and evil
- Modern representations
 - Relativity (M. C. Escher)
 - The Shining (Stephen King)



CA Mazes

- Conway's Game → Mazectric
 - If a cell is alive and has ~~0~~ 4 neighbors, dies (underpopulation)
 - If a cell is alive and has ~~4~~ 5 neighbors, dies (overpopulation)
 - If a cell is dead and has 3 neighbors, becomes alive (reproduction)
- Maze-like
 - Squint, and they're mazes!
 - [Work](#) has been done using CA to make “real” mazes



Perfect Mazes

- Colloquial
- Not “natural”
 - No closed circuits
 - No inaccessible areas
 - Only one solution
- Can be generated
 - Recursively and iteratively
 - Using graph-algorithms
 - Using tessellation
 - Using random walks (Wilson’s algorithm)

