Procedural generation

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What is Procedural Content Generation (PCG)?

- algorithmical creation of game content
- limited or indirect user input
- computer software that can create game content on its own
- key term here is “content”
- levels, maps, game rules, textures, stories, items, quests, music, weapons, vehicles, characters, etc
- another important term is “games”
- generated content must be playable
Why use procedural content generation?

- removes the need for having a human designer or artist generate that content
- saves development time
- helps us be more creative
- storage limitations
Map/terrain generation

- map requires values over a 2d or 3d grid
- forms the space that a player occupies and interacts with
Perlin noise

- an extremely powerful algorithm
- used often in procedural content generation
- a type of gradient noise
- developed by Ken Perlin in 1983
- can be used for any sort of wave-like, undulating material or texture
- could be used for procedural terrain, fire effects, water, and clouds
Cellular Automaton

- model of a system of “cell” objects
- each cell has a state
- each cell has a neighborhood
- used for dungeon generation
- create organic looking patterns