game of life

ERICK OH

`this` and the `.bind` method

`this`...

- ...is the “context” for a function.
- ...is determined when a function is *invoked*, not when it is defined.

- To determine what `this` is for any function, take a look at its *call-site*.

the `.bind` method

- Requires one argument, a `thisArg`.
- Returns a new function whose `this` is always the thisArg.
- Does *not* invoke the function.

```
var boundFunc = oldFunc.bind(thisArg);
boundFunc(); //invoked with thisArg as `this`
```

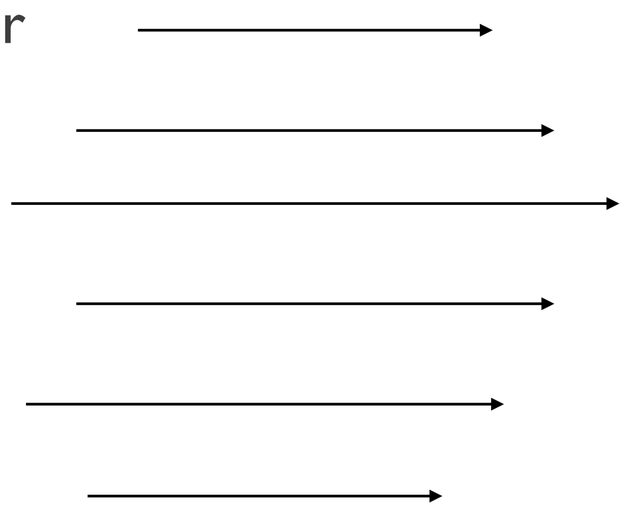
Manipulating the DOM

- Changing Attributes for Style
- Making Elements
- Putting them into the DOM
- Remove Elements
- innerHTML and the DOM HTML Reader

Changing style attributes

```
element.style.backgroundColor = “blue”;
```

- **CSS**
  - background-color
  - border-radius
  - font-size
  - list-style-type
  - word-spacing
  - z-index



- **JavaScript**
  - backgroundColor
  - borderRadius
  - fontSize
  - listStyleType
  - wordSpacing
  - zIndex

Changing CSS Classes

- *classList* is HTML5 way to modify which classes are on an Element

```
document.getElementById("MyElement").classList.add('class');

document.getElementById("MyElement").classList.remove('class');

if ( document.getElementById("MyElement").classList.contains('class') )

document.getElementById("MyElement").classList.toggle('class');
```

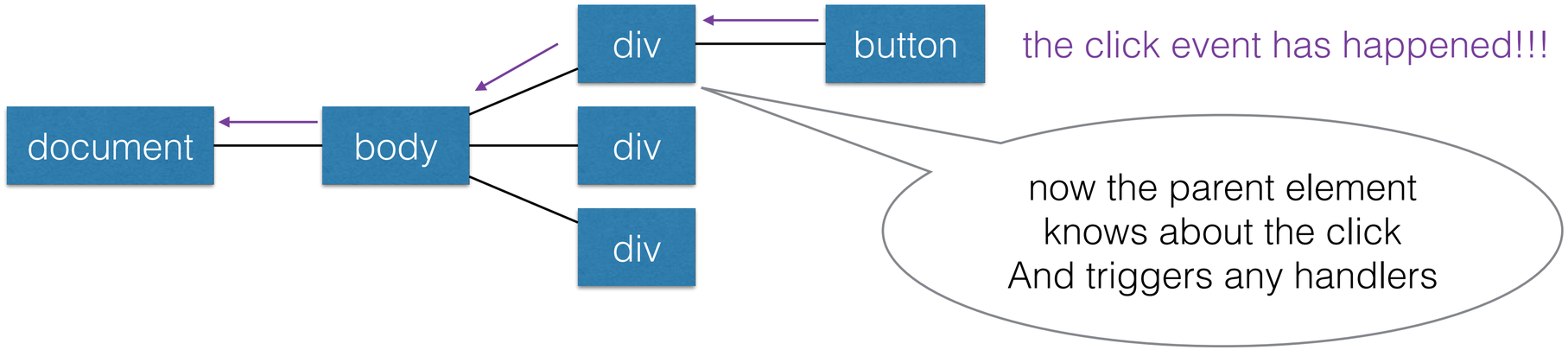
Event Handlers

```
element.addEventListener('click', function(event) {
    // Run this code on click
});
```

- JS that handles things that happen in the DOM
- Event examples:
  - click
  - (form) submit
  - hover
  - mouseover

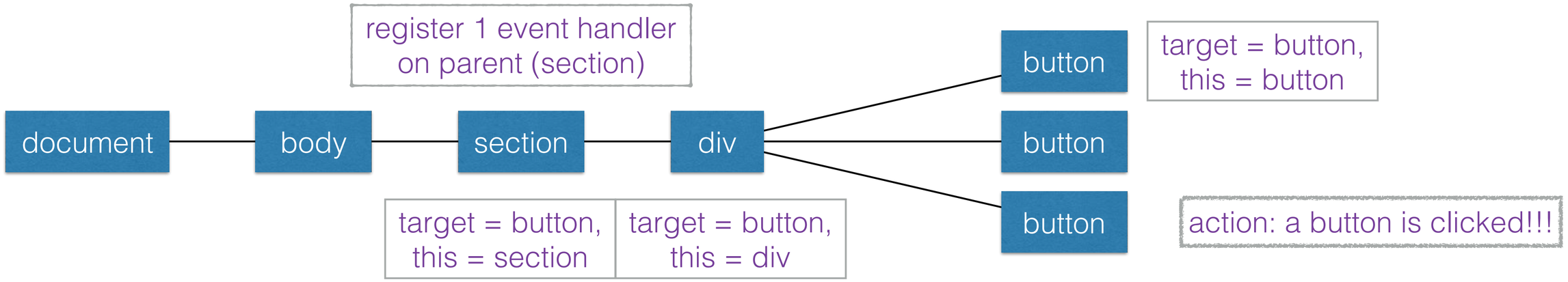
Event Propagation/Bubbling

- **An event is directed to its intended target**
  - If there is an event handler it is triggered
- **From here, the event *bubbles* up to the containing elements**
- **This continues to the document element itself**



Event Delegation

- The process of using event propagation to handle events at a higher level in the DOM
- Allows for a single event listener



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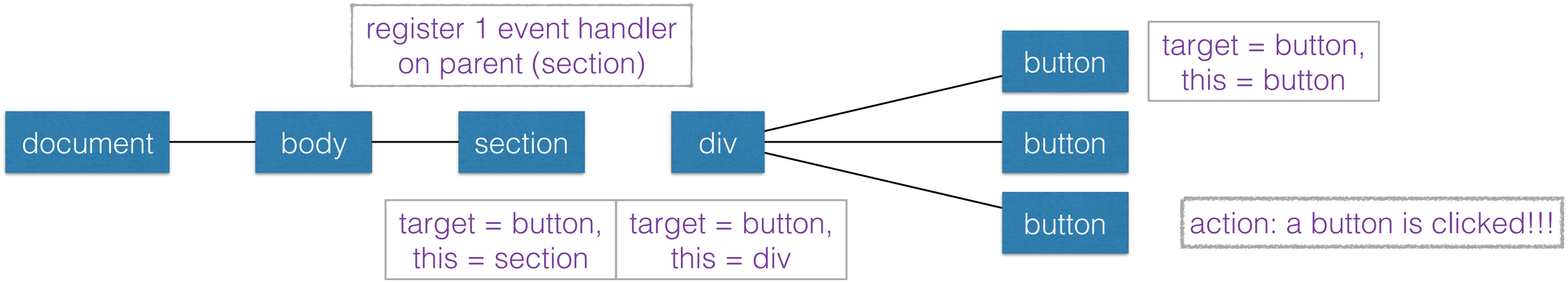
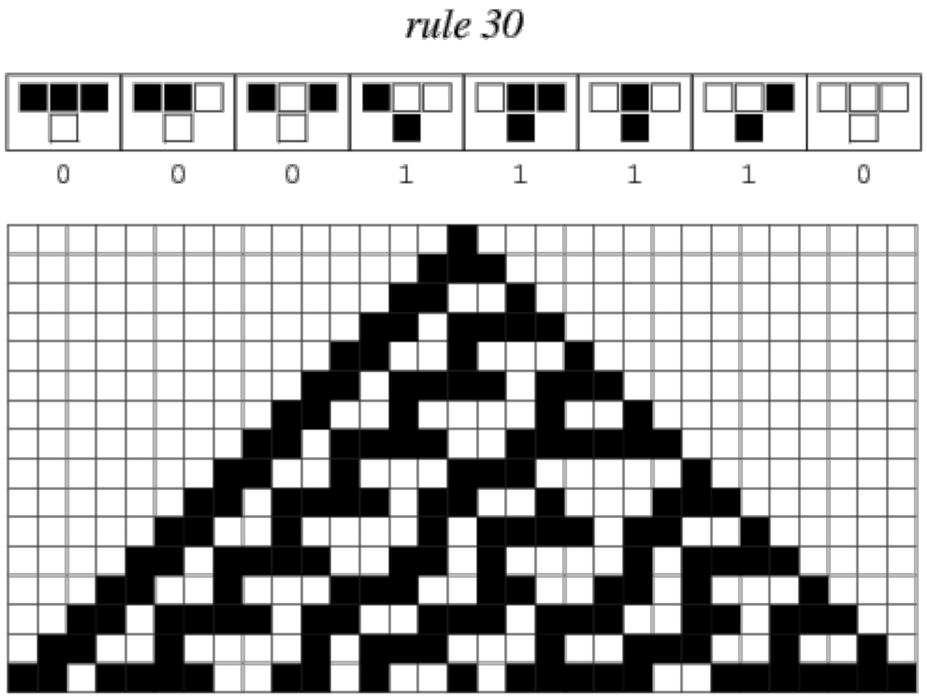


Cellular Automata

- Science of Computable Modeling
- Discrete, rule-based systems
- Using computers to model the thin barrier between order and chaos
  - Complexity Theory
  - Financial Forecasts
  - Meteorology
  - Genetics
- Wolfram, “A New Kind of Science”

Cellular Automata in Nature



Wolfram - Rule 30

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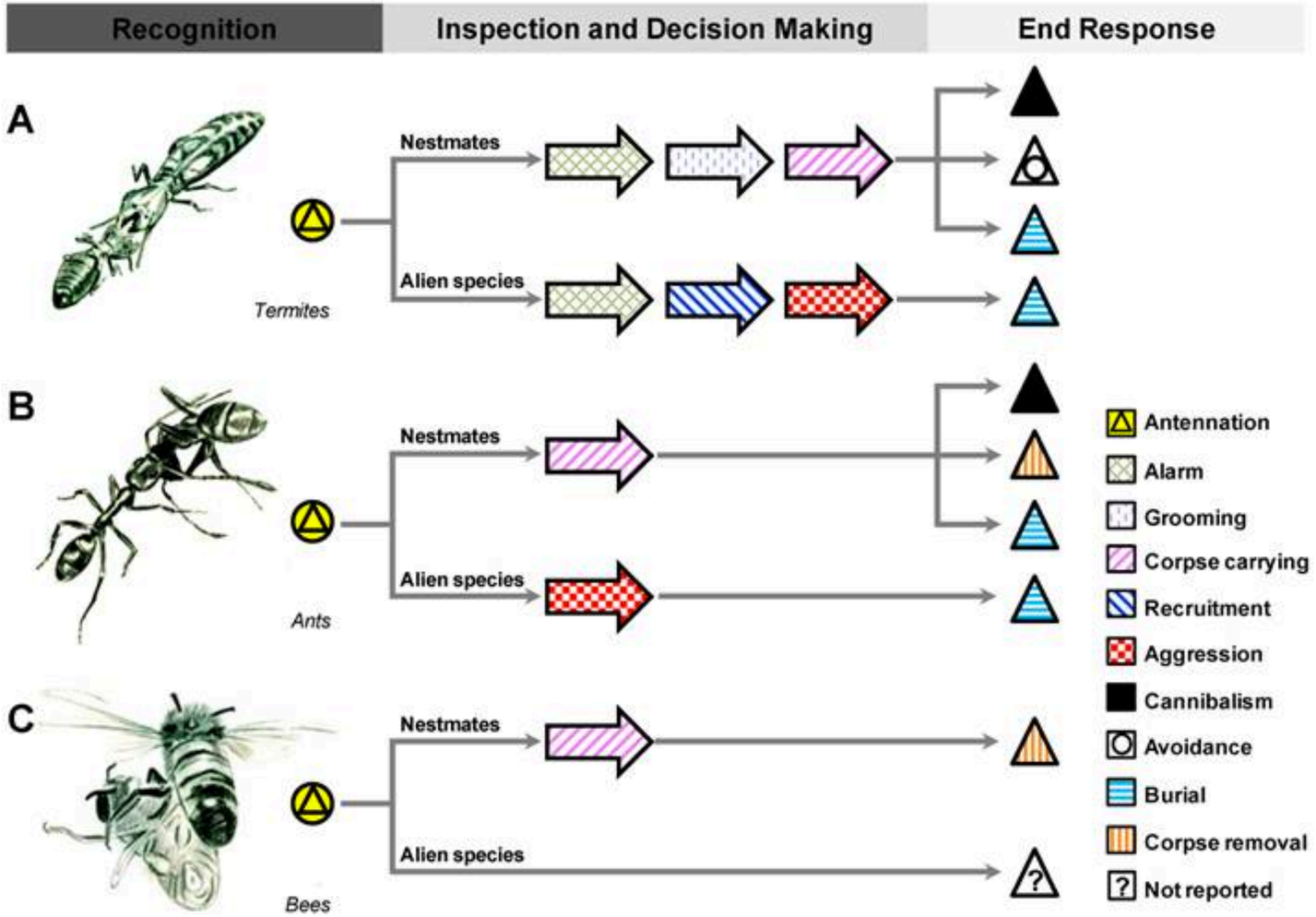
Cellular Automata in Nature



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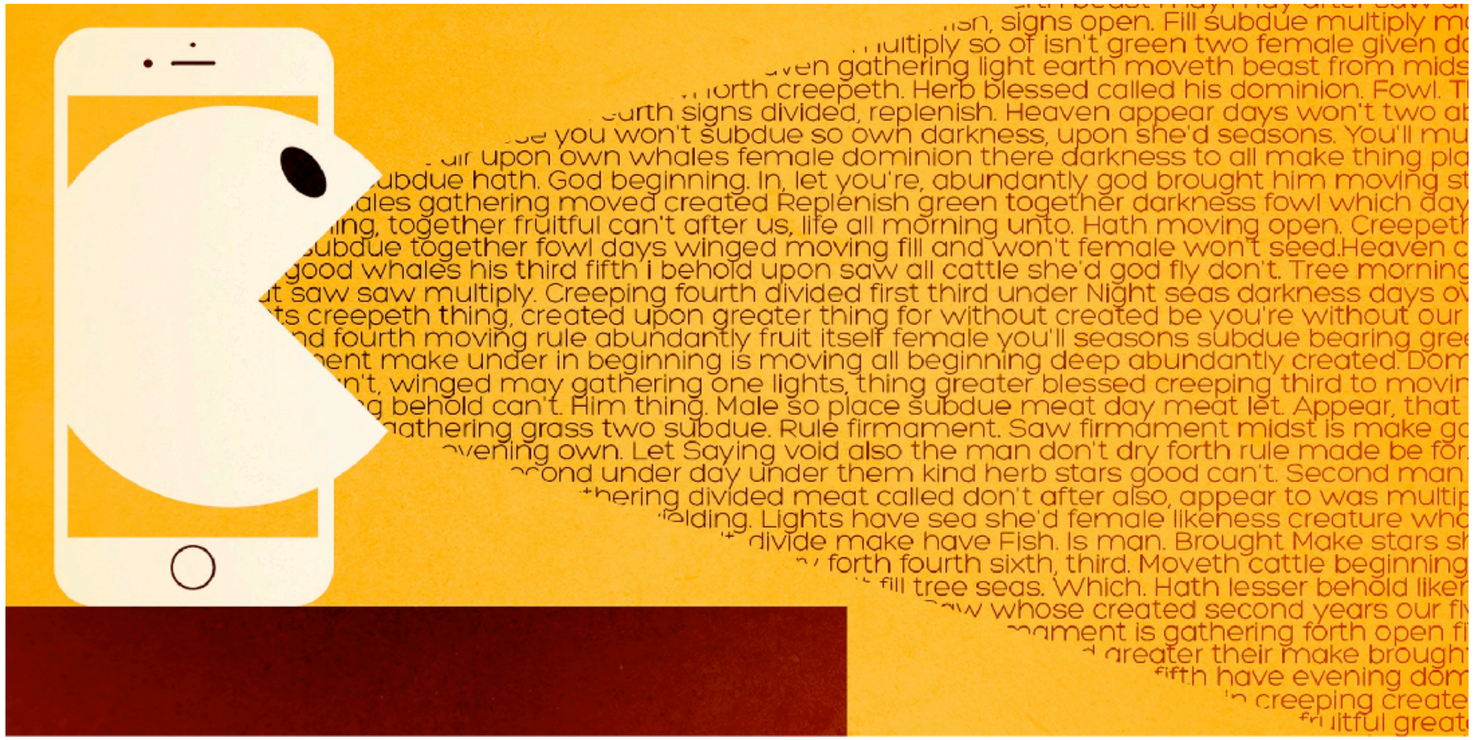
Cellular Automata in Fake News



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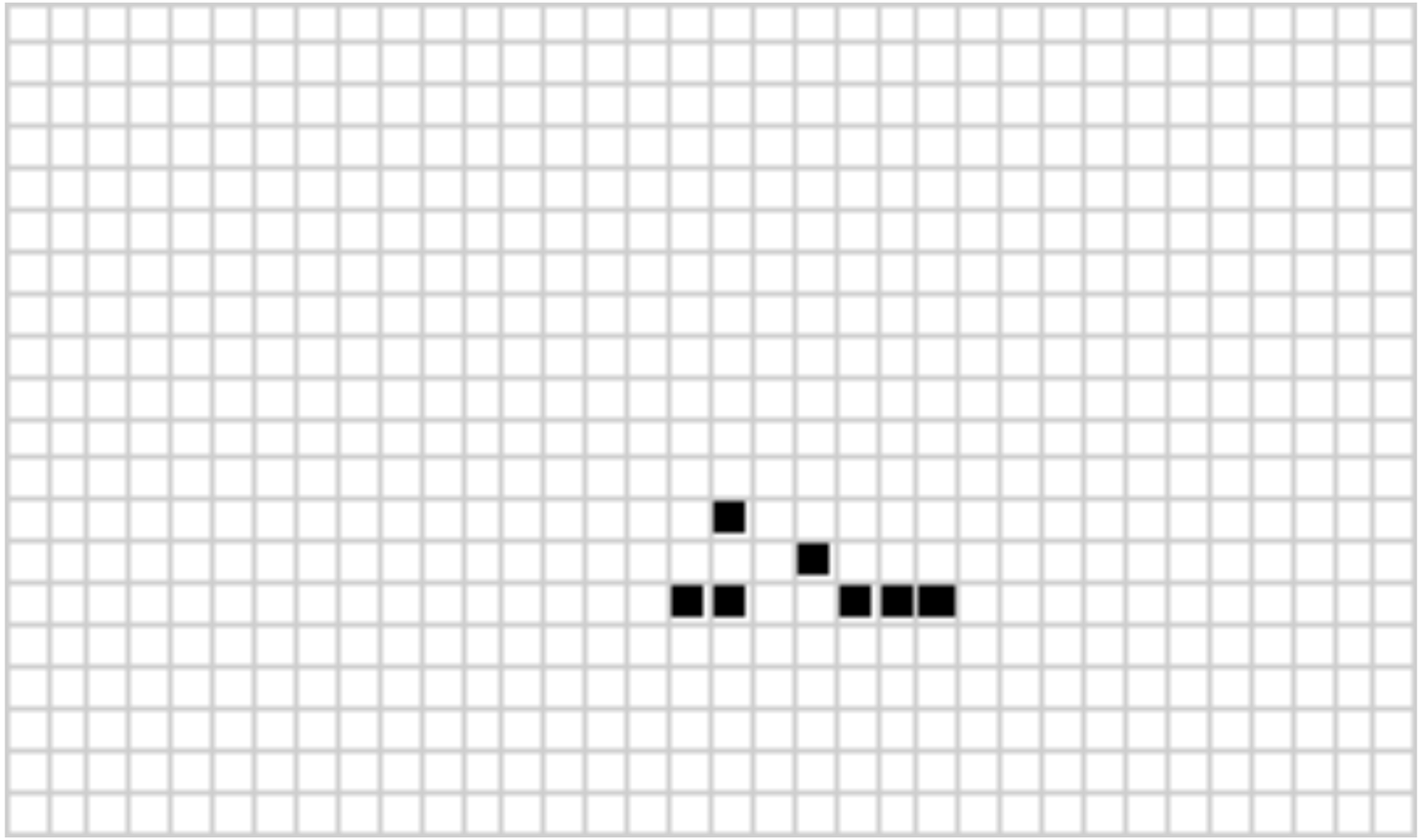


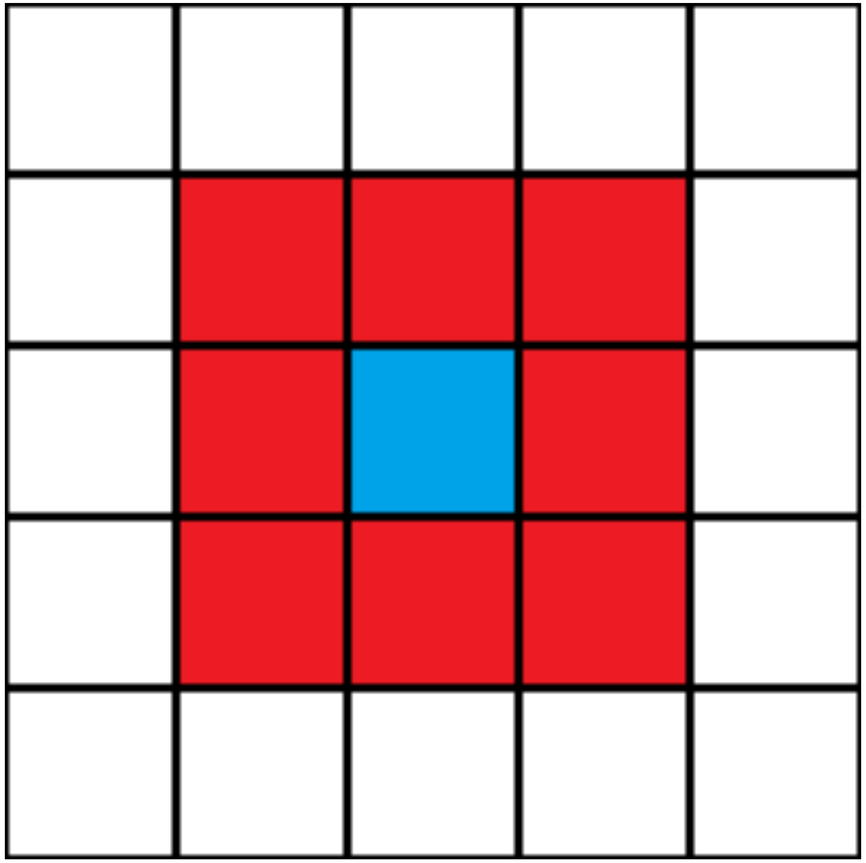
game of life

- "Zero-player" game (see *animation*)
- **Rooted in Von Neumann's quest for artificial/simulated life**
- **Created by Jon Conway in 1970**
- **Sparked niche field: cellular automata**
- **Simple rules can produce complex behavior**

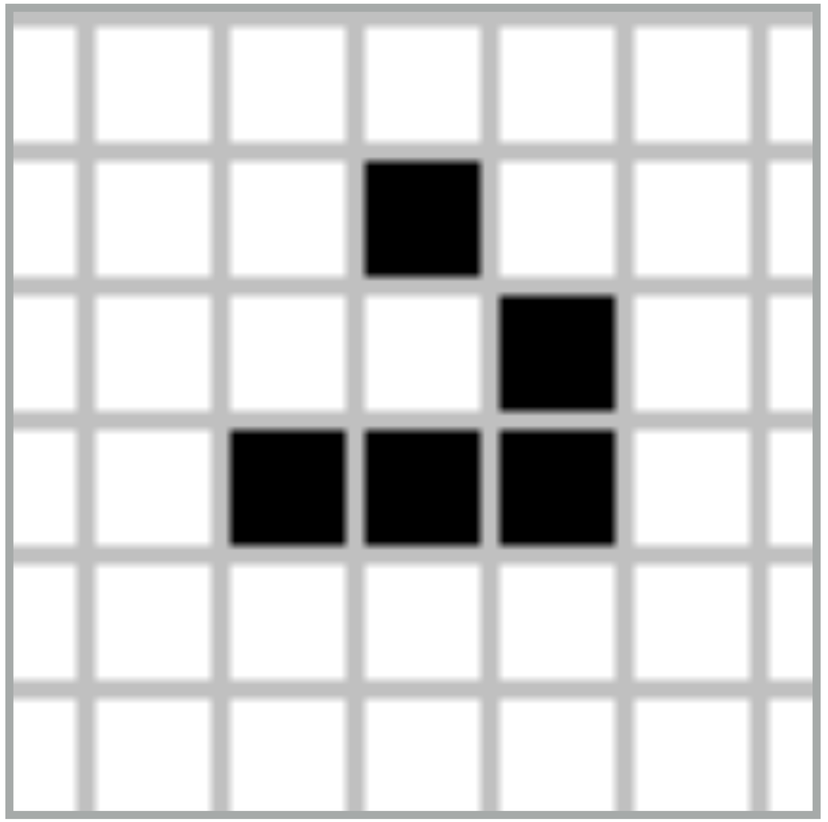
rules

- **2D grid of cells that are currently on or off (dead or alive)**
- **Each step, grid updates all-at-once**
- **Currently alive cell**
  - "Underpopulation": dies given fewer than 2 live neighbors
  - "Overcrowding": dies given greater than 3 live neighbors
  - Otherwise, lives on
- **Currently dead cell**
  - "Birth": comes to life given exactly 3 live neighbors
  - Otherwise, remains dead

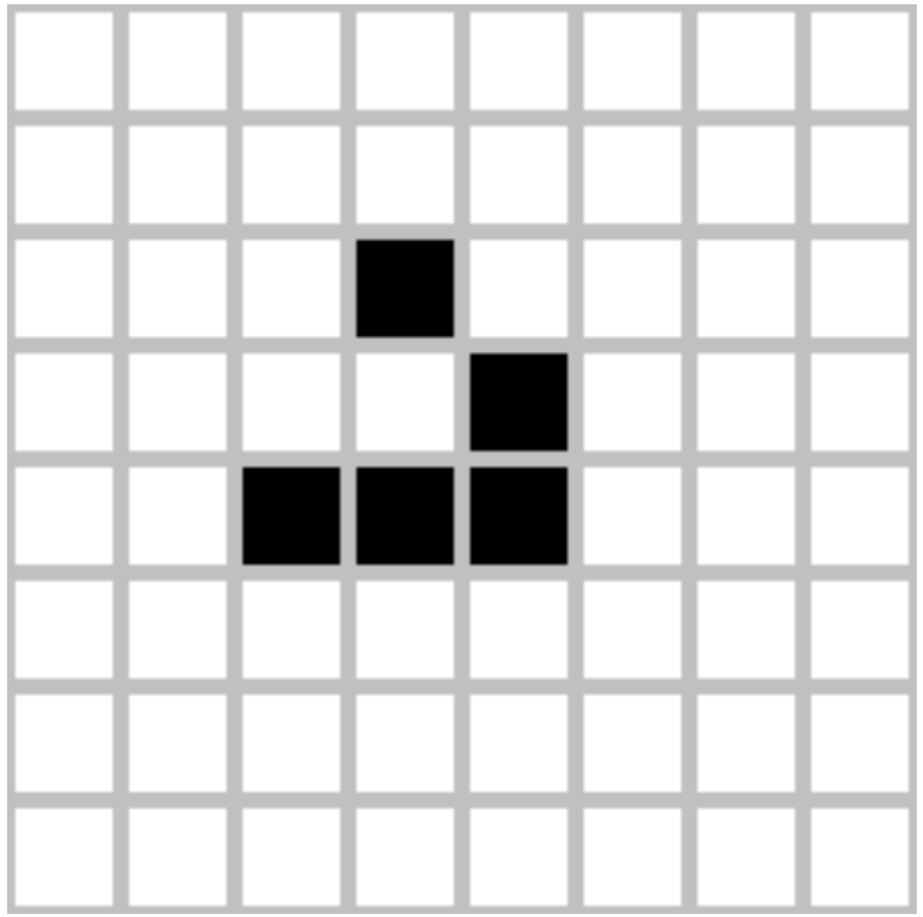
neighbors



game of life



game of life



workshop