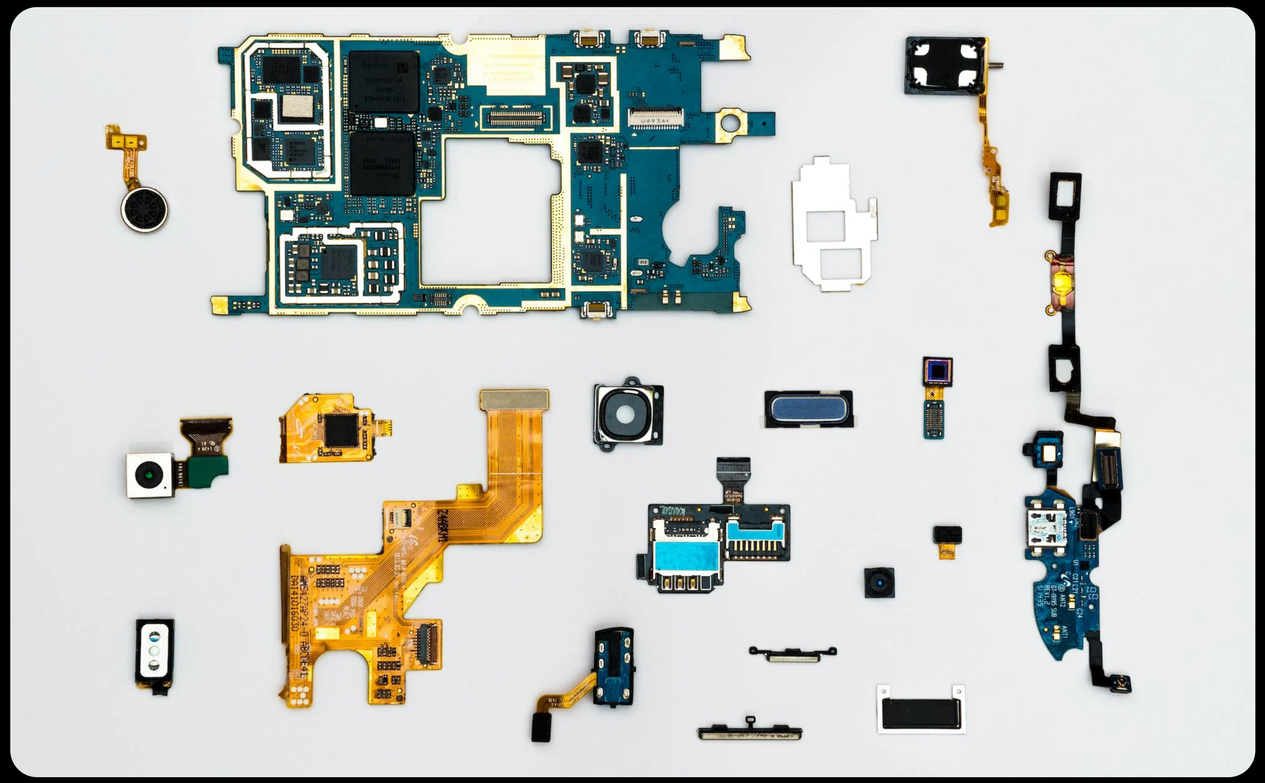
Introduction to p5.js

00

A word on p5.js



p5.js is open source software designed to serve the underserved.

Our mission is to promote software learning within the arts, artistic learning within technology-related fields, and to celebrate the diverse communities that make these fields vibrant, liberatory, and innovative. Our goal is to support people of all backgrounds in learning how to program and make creative work with code, especially those who might not otherwise have access to tools and resources. We also believe that some of the most radical futures and innovative technologies are being built by communities that have been pushed to the margins by dominant tech. We hope to support those who have been marginalized by technology in continued self-determination by providing time, space, and resources.

01

The p5.js Lifecycle

`setup()`
`draw()`

The `setup()` function runs once, at the beginning of your program. Usually you use it to create the canvas to draw onto, or load images. It’s a special reserved name that p5.js knows how to look for, and p5 runs it for you.

`setup()`

`draw()`

The `draw()` function runs once every frame, by default 60 frames per second. Because of this, it's a kind of *infinite loop*. This is where the magic happens. It's also a reserved name that p5.js knows how to look for and run.

1. `setup()`

2. `draw()`

1 `setup()`

2 3 `draw()`

1 `setup()`

2 3 4 `draw()`

1 `setup()`

∞ `draw()`

Refresher
Variables

What is a Variable?
Variables are names which you assign values to, and can reassign value to later (hence the name). They're essential to a program's ability to "remember" values for later, or to pass values around within the program, and to your own ability to remembering what your code does and what each piece of data is for.

Untyped
Can store any kind of data.

Typed
Can only store specific value types.

Constants
Cannot be changed later.

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```
2
3  let GRID_ROWS = 9;
4  let GRID_COLS = 9;
5  const CANVAS_W = 400;
6  const CANVAS_H = 400;
7  const BORDER = 40;
8  const CANVAS_W_TRUE = CANVAS_W + 2 * BORDER;
9  const CANVAS_H_TRUE = CANVAS_H + 2 * BORDER;
10 let GRID_W = CANVAS_W / (GRID_ROWS - 1);
11 let GRID_H = CANVAS_H / (GRID_COLS - 1);
12
```

Refresher
Functions

What is a Function?
If variables are the nouns of your program, the functions are the verbs: they are what your program does. In many languages, functions are also objects, meaning they can be stored inside variables. Functions are so important to programming that an entire class of languages, functional, exist in which the whole paradigm of programming is oriented around functions.

Imperative
Run on command.

Event-driven
Run in response to events.

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Imperative

Run on command.

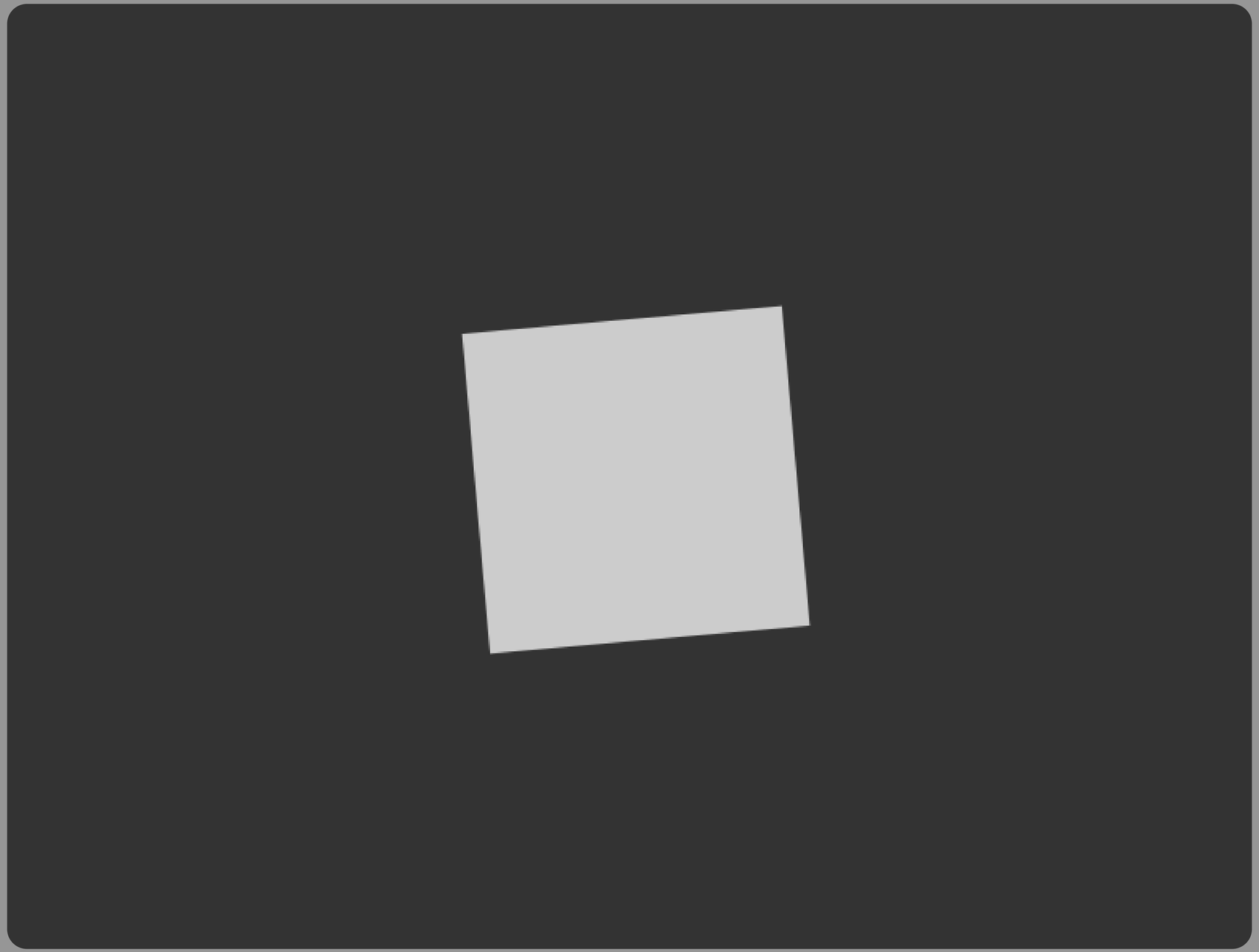
Event-driven

Run in response to events.

```
81
82 function setup() {
83   createCanvas(CANVAS_W + BORDER * 2, CANVAS_H + BORDER * 2);
84 }
85
86 function drawGrid() {
87   for (let i = 0; i < GRID_ROWS; i++) {
88     for (let j = 0; j < GRID_COLS; j++) {
89       stroke(255);
90       point(...gridToDrawCoord(i, j));
91     }
92   }
93 }
```

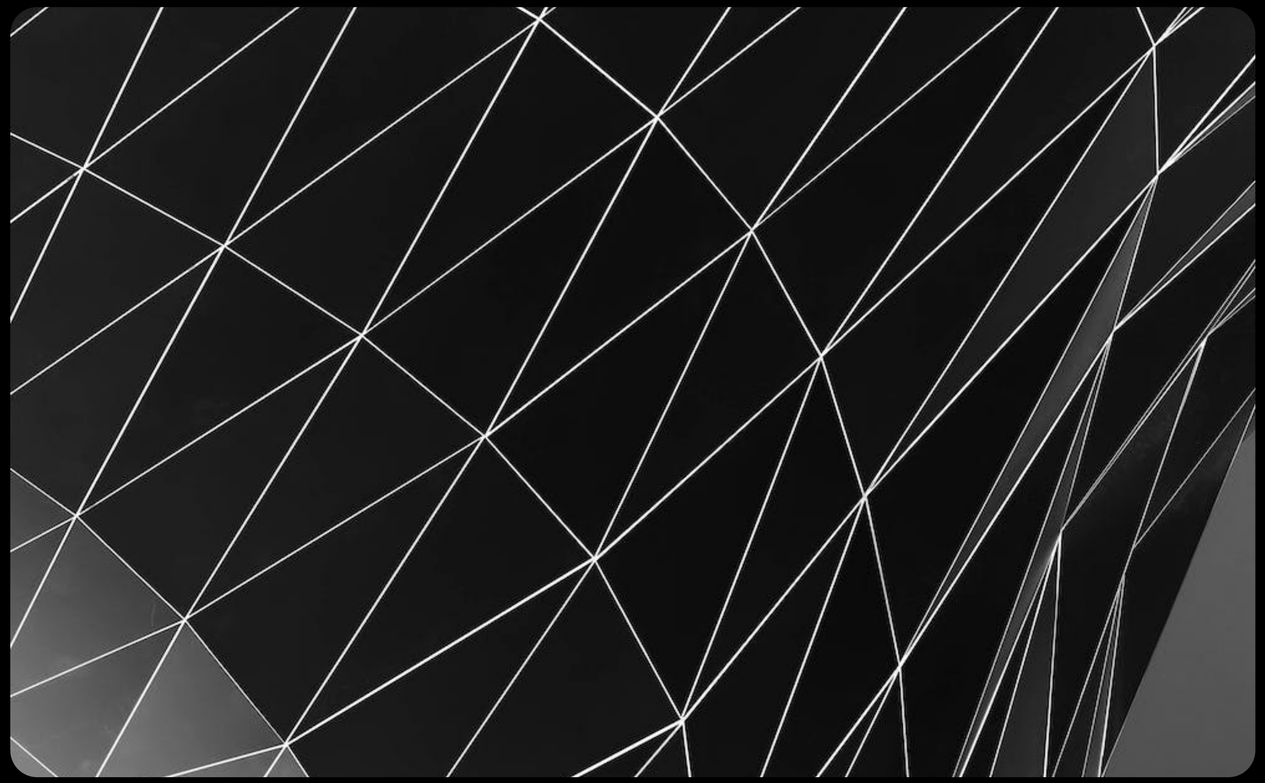
Live code demo
Variables

https://editor.p5js.org/mngyuan/sketches,
click on “CC W4 1”

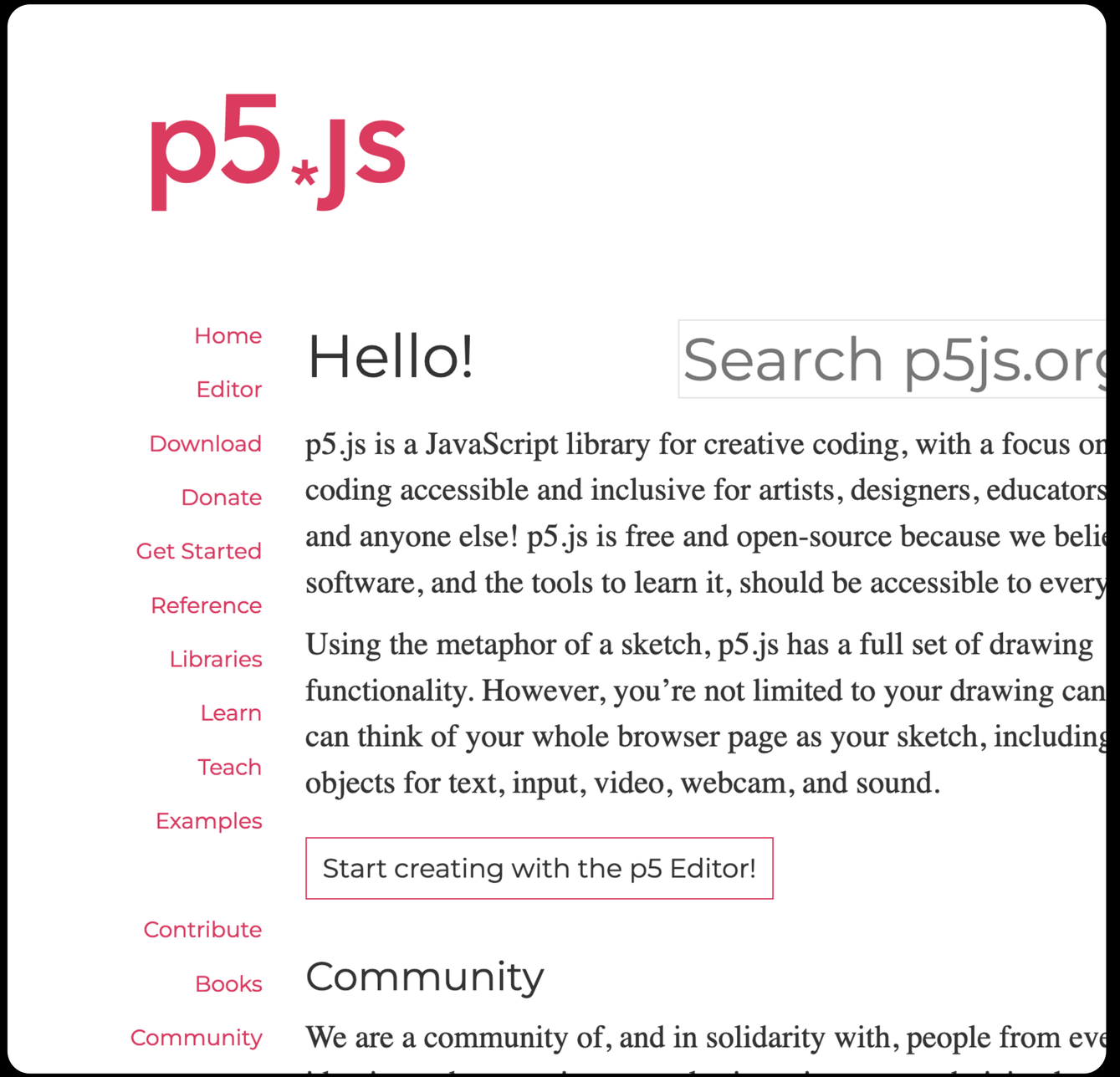


02

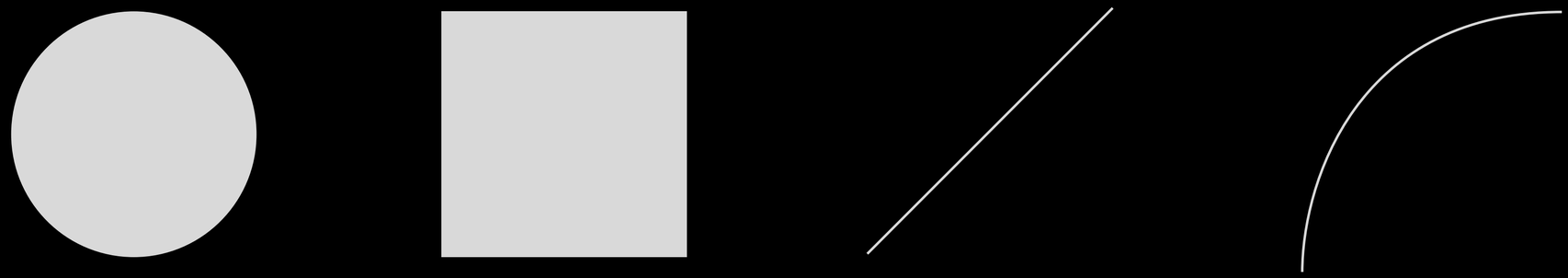
Geometric Primitives



The p5.js site has documentation, examples, and resources, all free to use.

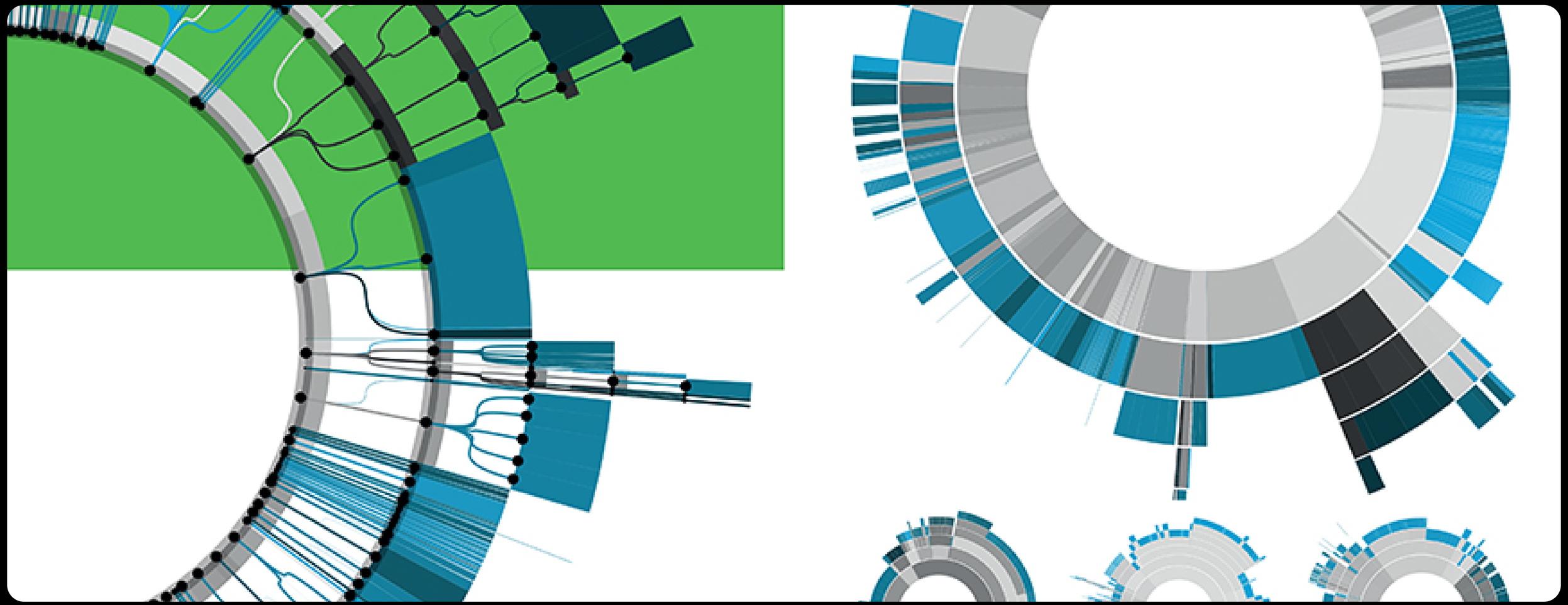


Geometric primitives



“Analog Algorithm”

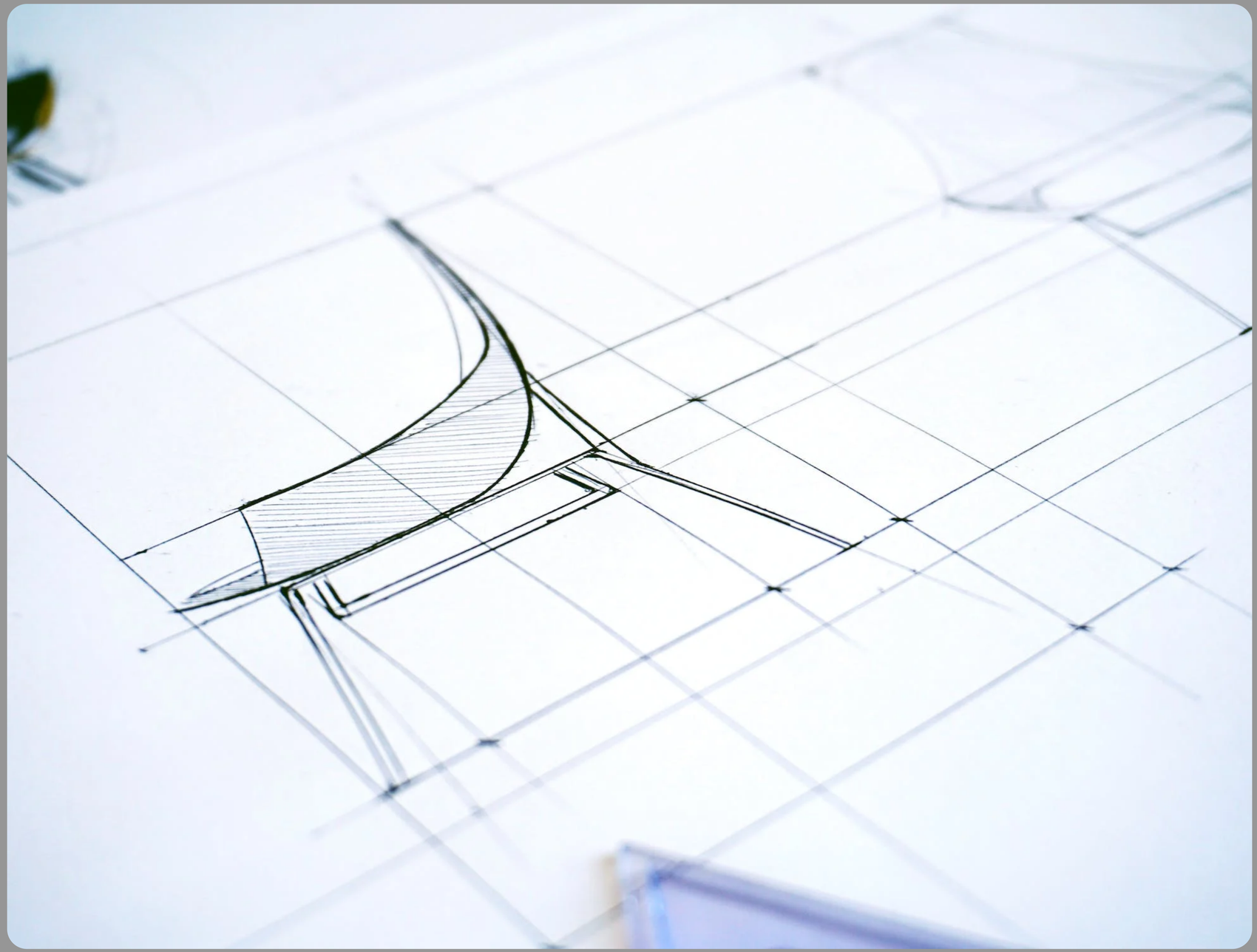
“Generative Design”



Live paper demo
Primitives

Using the 4 geometric primitives we talked about - the ellipse, the rectangle, the line, the arc - in groups, quietly

1. give each person one primitive. only they can use that primitive. once you've agreed,
2. slowly and without talking, draw the most interesting drawing you can as a group



Live code demo
Primitives

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