WHY CSS GRID IS A GAME-CHANGER FOR WEB DESIGN

CONSTELLATION

Me trying to
Write CSS

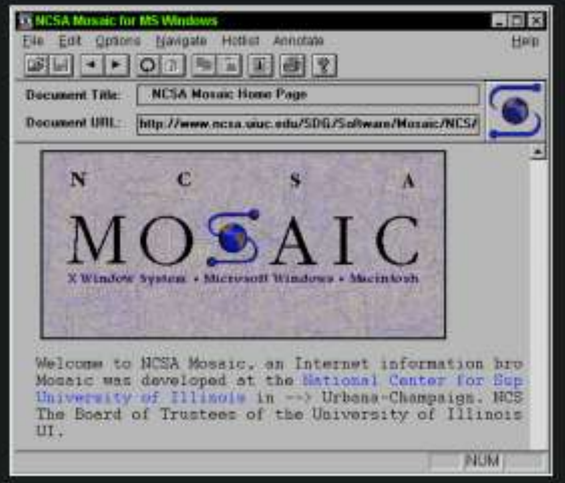
CSS FLOATS
Y U NO CLEAR YOURSELF?!?
Troll.me

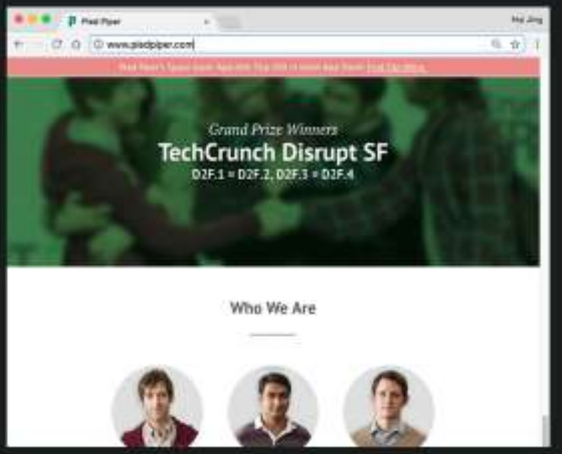
Tricky CSS inheritance issue on Monday
CHALLENGE ACCEPTED
Tricky CSS inheritance issue on Friday
!important
all the things!

The World Wide Web
Launch back in 1990

WHERE THE
WEB
WAS BORN

Web layouts over the years

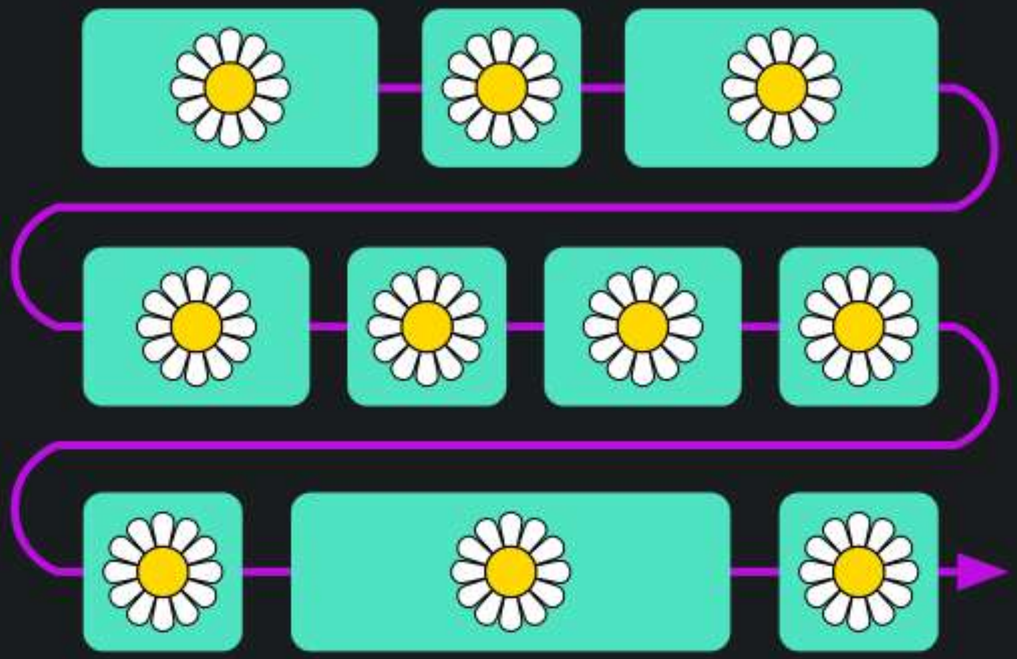




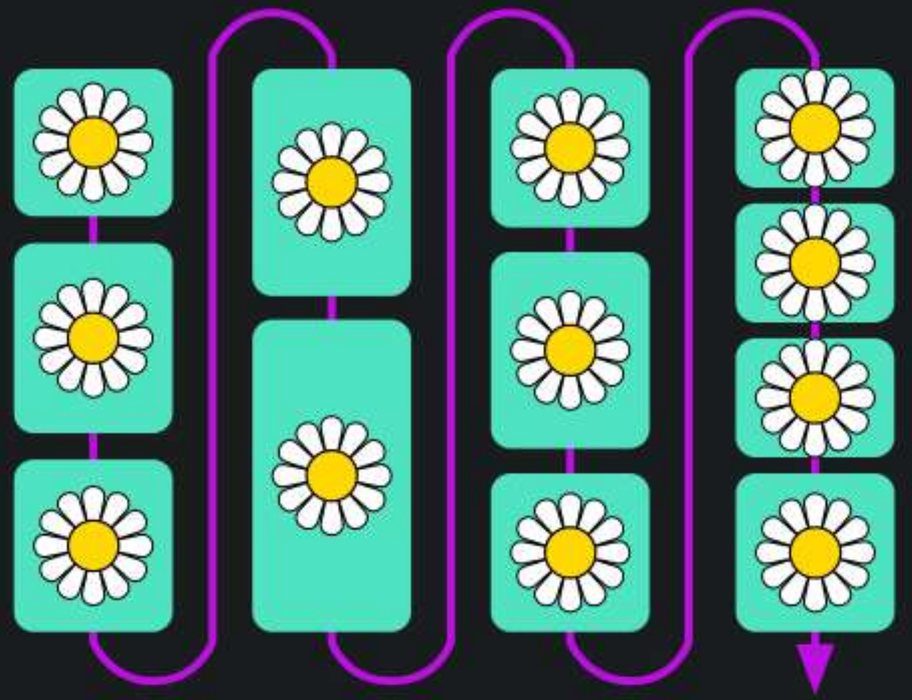
Grid Flexbox?

Grid AND Flexbox

Flexbox ➡ single dimension



flex-direction: row

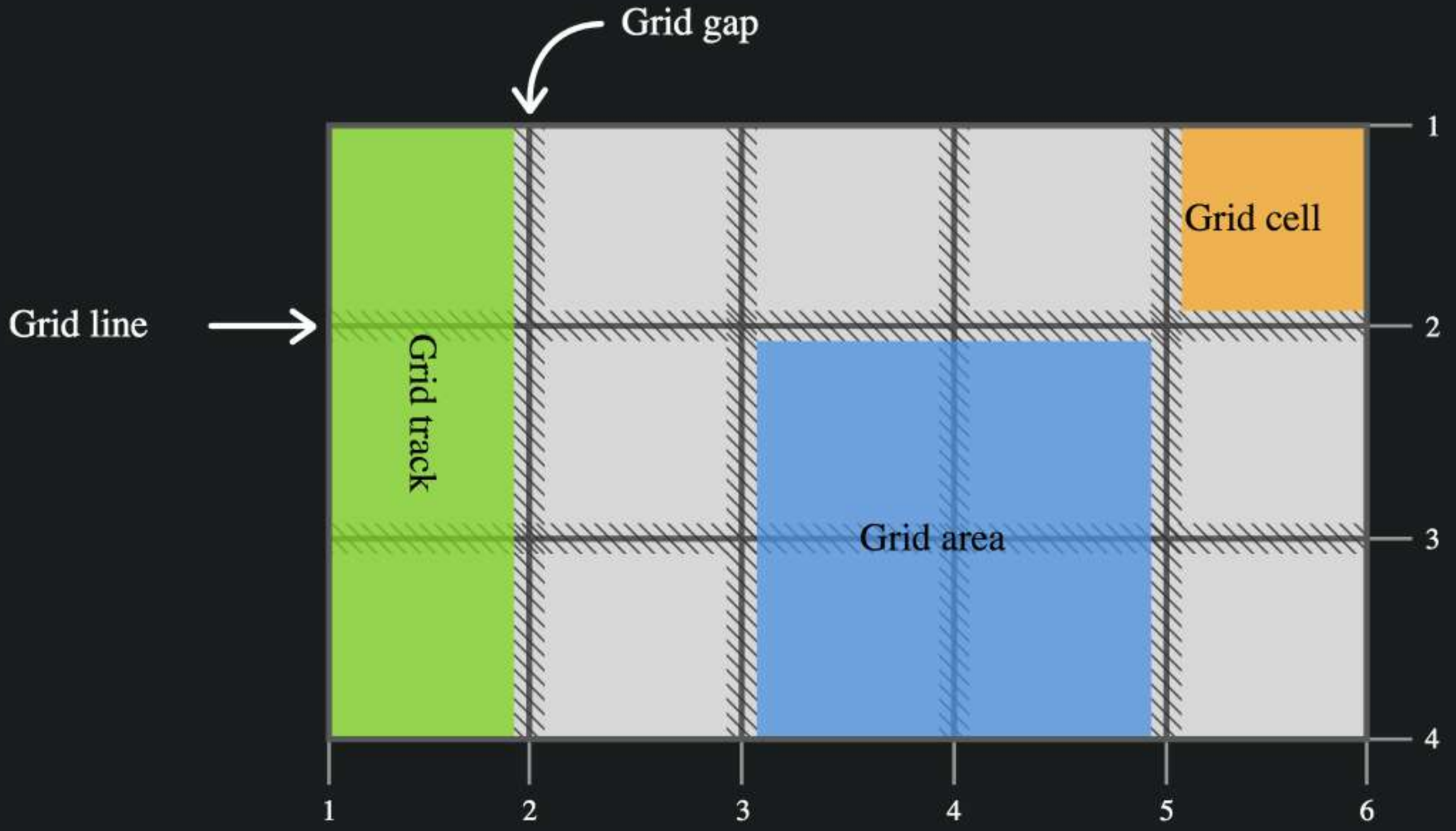


flex-direction: column

What is CSS grid?

Defines a **two-dimensional** grid-based layout system, optimized for user interface design.

Basic terminology



Flexbox and Grid

Based on the container-child relationship

> “Grid works from the **container** in, other layout methods start with the **item**”
>
> —Rachel Andrew

Layout technique: `inline-block`

Item A	Item B	Item C
Item D	Item E	Item F

```
.inlineblock__item {
  display: inline-block;
  width: calc(100% / 3);
}
```

Layout technique: `float`

Item A	Item B	Item C
Item D	Item E	Item F

```
.float__item {
  float: left;
  width: calc(100% / 3);
}
```

Layout technique: `flex`

Item A	Item B	Item C
Item D	Item E	Item F

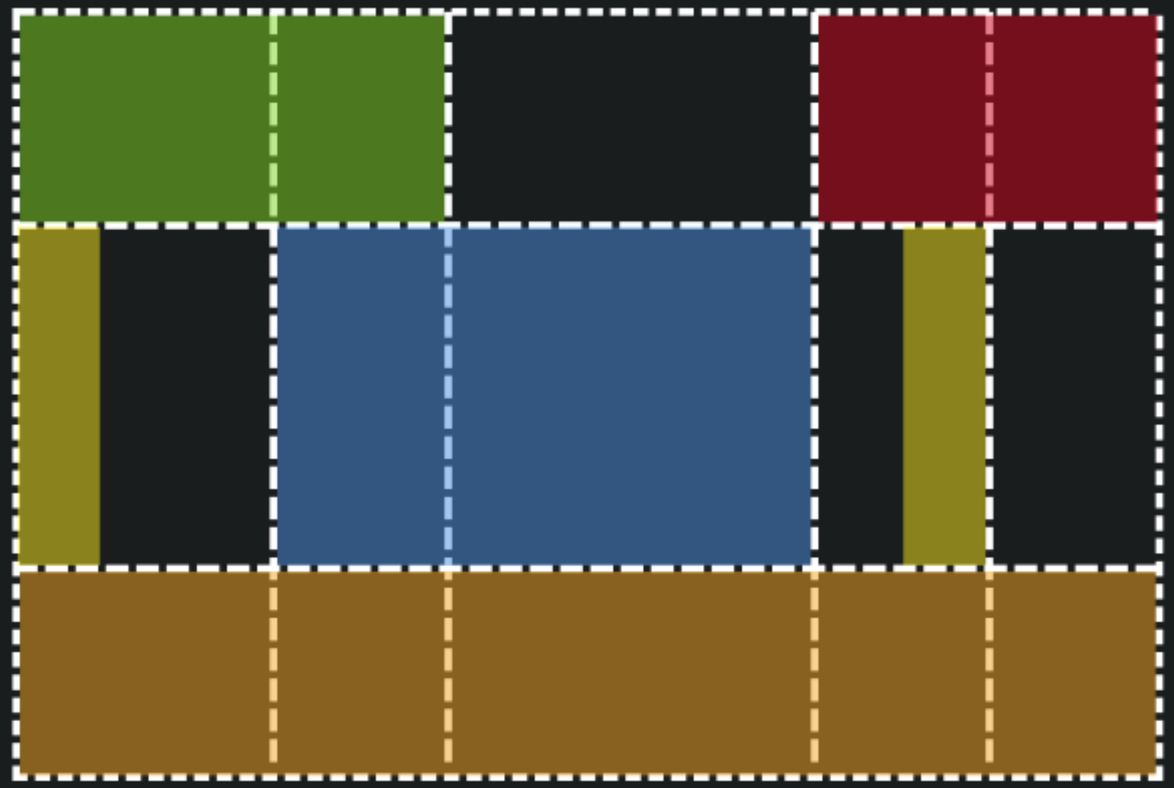
```
.flexbox {
  display: flex;
  flex-wrap: wrap;
}

.flexbox__item {
  flex: 1 1 calc(100% / 3);
}
```

“Grid is the only layout technique that establishes a **relationship** between rows and columns of grid items.”

CSS grid basics

Define your grid.

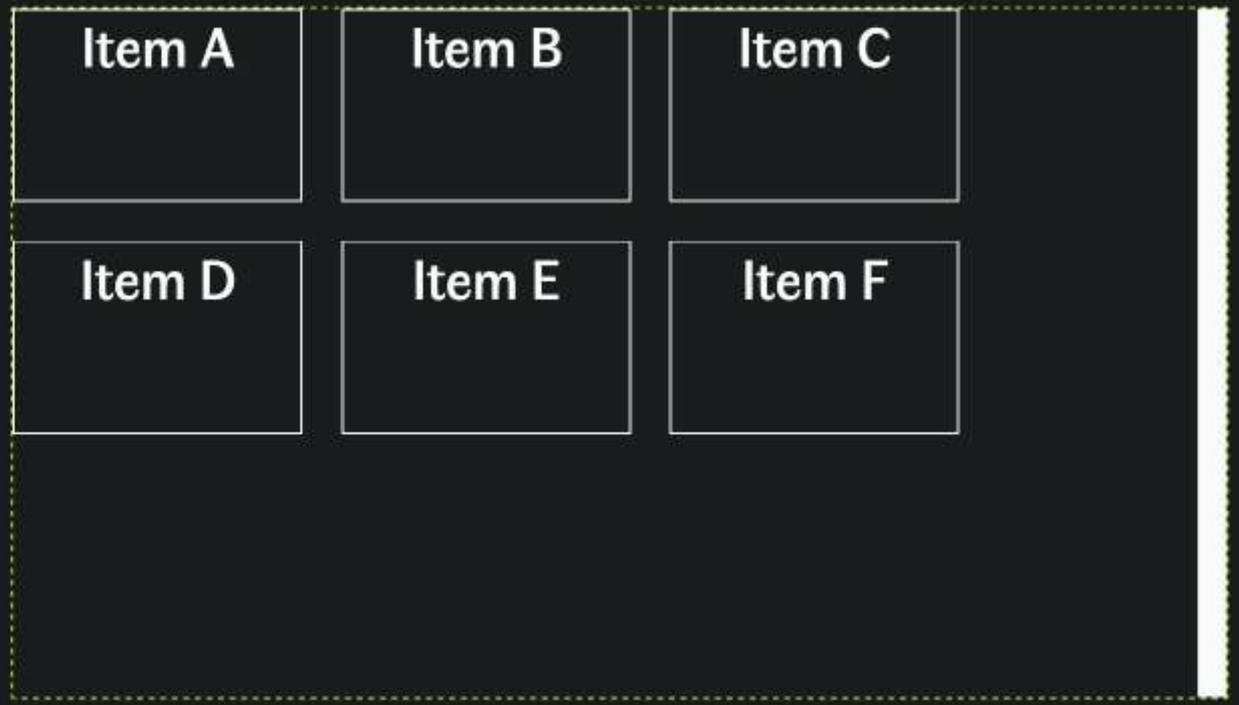
Place items in the grid.



Properties on the Grid container

Defining a grid

```
<div class="grid1">
  <div class="grid1__item">
    <p>Item A</p>
  </div>
  <div class="grid1__item">
    <p>Item B</p>
  </div>
  <div class="grid1__item">
    <p>Item C</p>
  </div>
  <div class="grid1__item">
    <p>Item D</p>
  </div>
  <div class="grid1__item">
    <p>Item E</p>
  </div>
  <div class="grid1__item">
    <p>Item F</p>
  </div>
</div>
```




```
.grid1 {
  display: grid;
  grid-template-columns: 150px 150px 150px;
  grid-template-rows: 100px 100px;
  grid-gap: 20px;
}
```

“Cede **control** of your designs to the **browsers** that render them.”

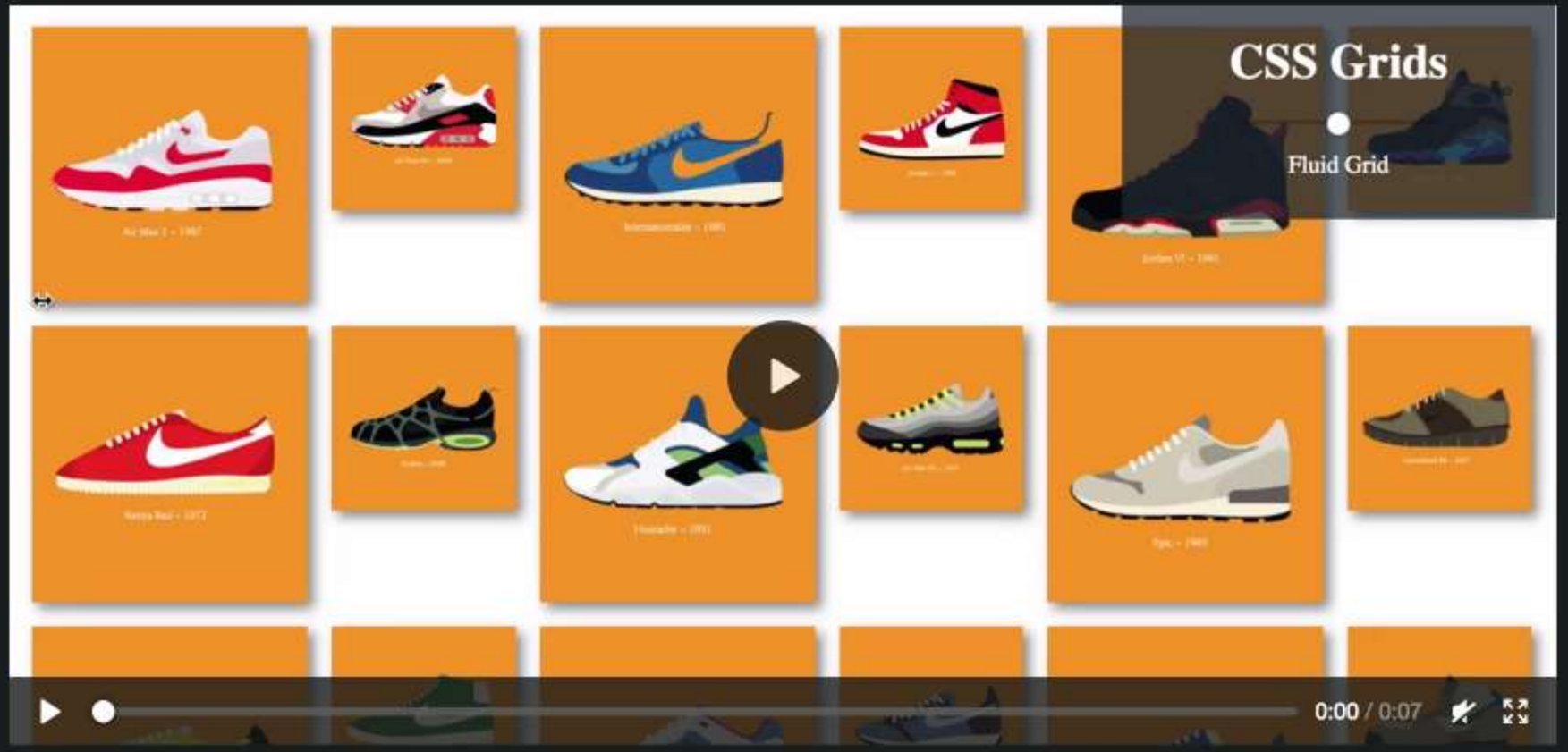
The `fr` unit

Represents a **fraction** of the **free space** in the grid container.

```
.grid4 {
  display: grid;
  grid-template-columns: 150px 1fr
2fr;
}
```

Fluid CSS grid

```
.container {
  display: grid;
  grid-template-columns: repeat(3, 3fr 2fr);
}
```



The `minmax()` function

Defines a size range for columns or rows in the grid.

```
.grid5 {
  display: grid;
  grid-template-columns:
minmax(200px, 1fr) 300px 300px;
}
```

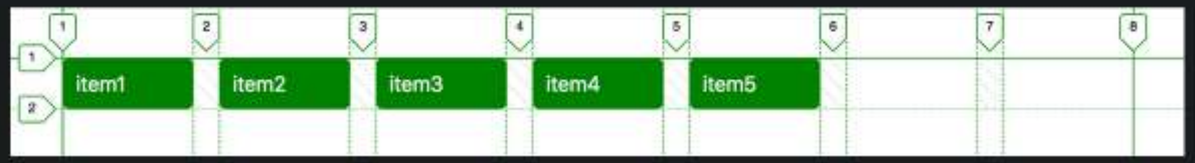
The `repeat()` function

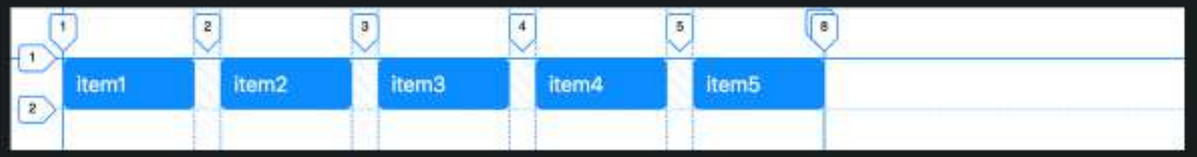
To specify a large number of columns or rows that follow a similar pattern

```
.grid6 {
  display: grid;
  grid-template-columns: repeat(4,
75px 120px);
}
```

auto-fill vs. auto-fit

Allow browser to determine how many tracks to create depending on track size.



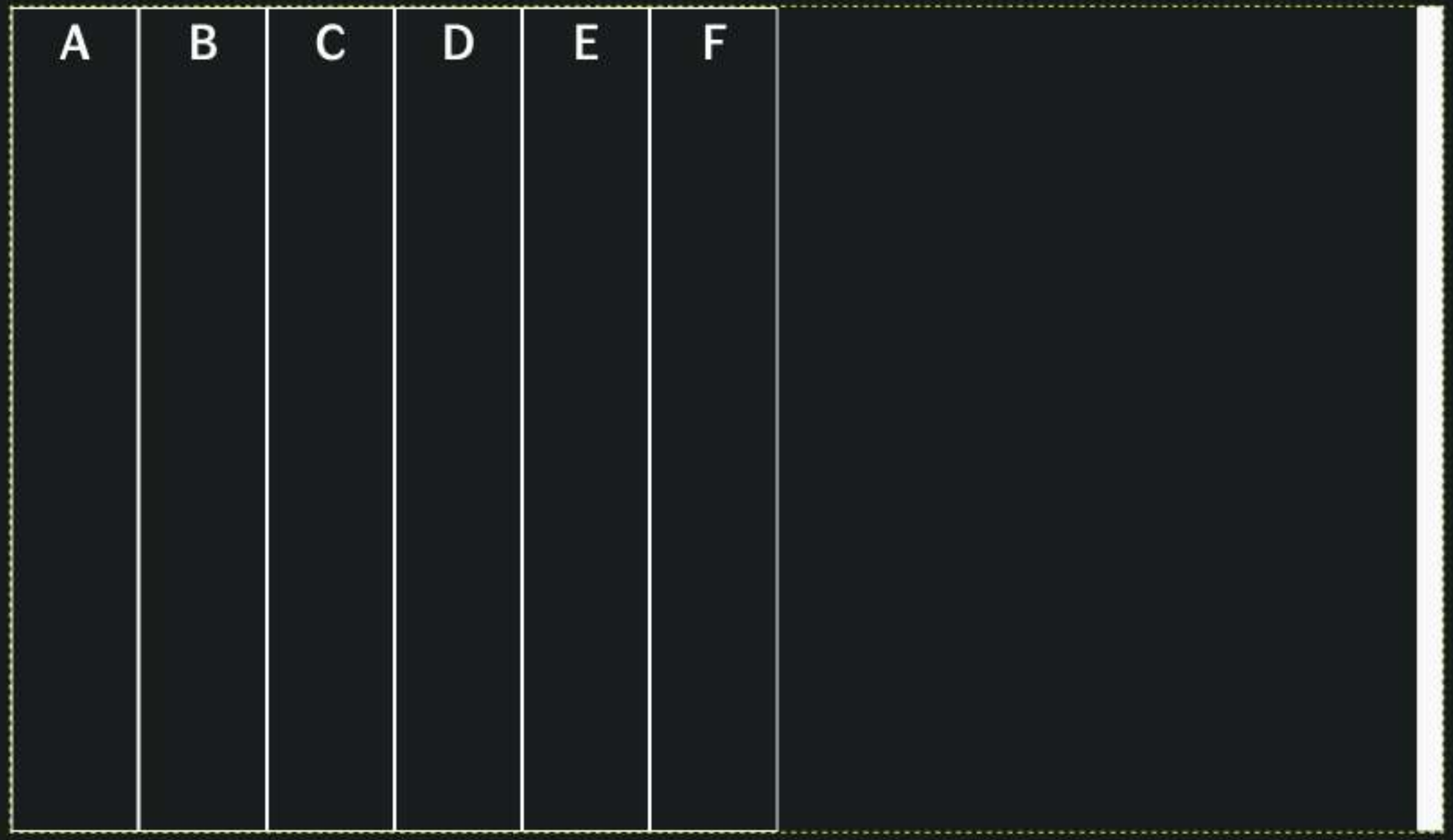



```
repeat(auto-fill, 100px);
```

```
repeat(auto-fit, 100px);
```

`auto-fit` collapses empty tracks.

auto-fill versus auto-fit




```
.keyword {
  display: grid;
  grid-template-columns:
repeat(auto-fill, minmax(2.5em,
1fr));
}
```

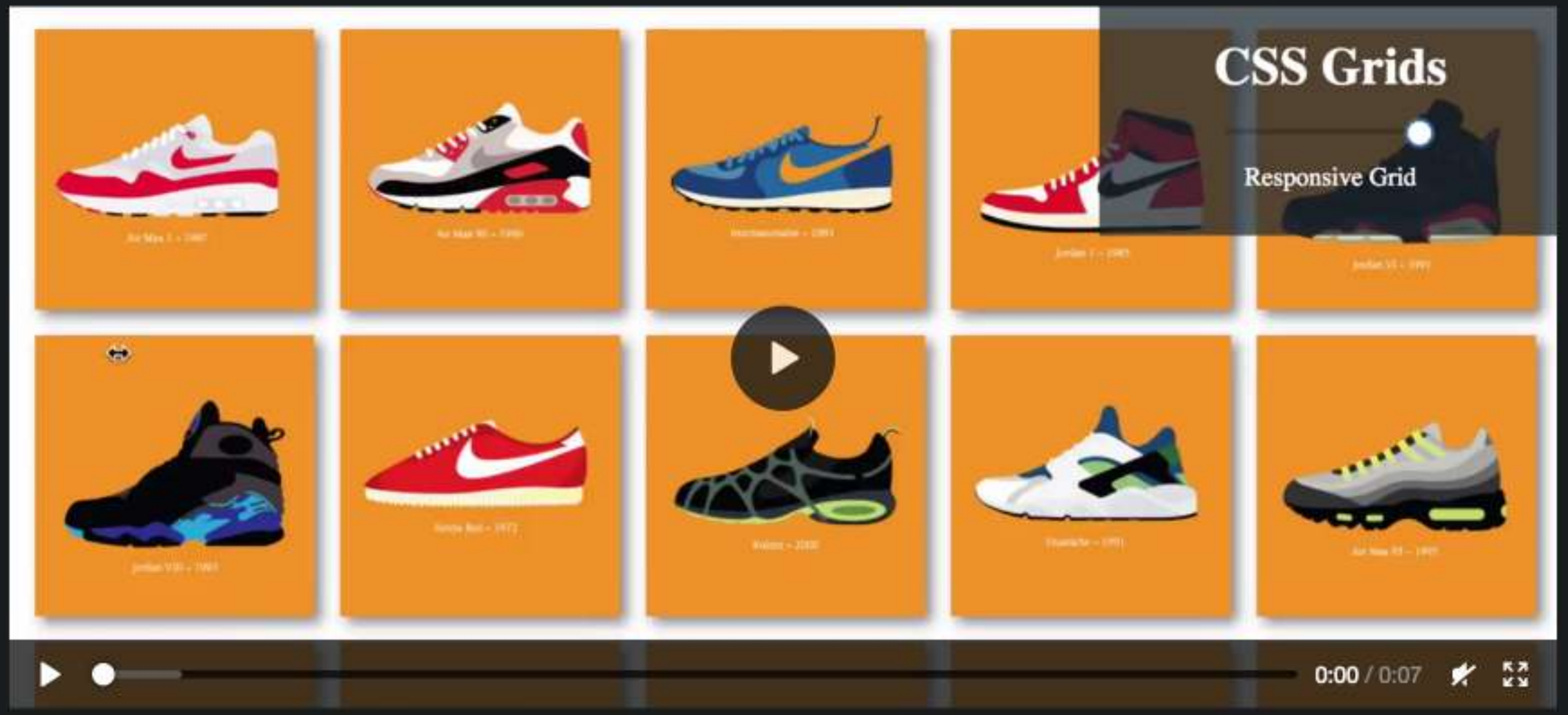
auto-fill versus auto-fit

A	B	C	D	E	F

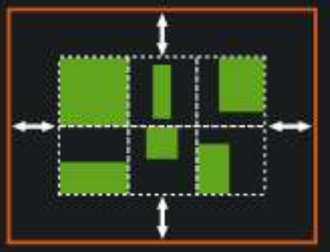
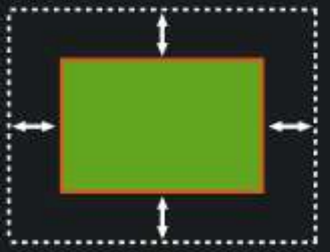
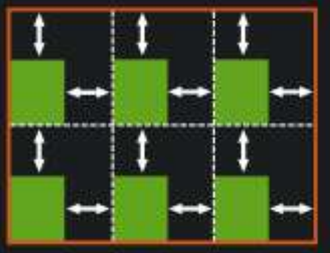
```
.keyword {
  display: grid;
  grid-template-columns:
repeat(auto-fit, minmax(2.5em,
1fr));
}
```

Responsive grid without media queries

```
.container {
  display: grid;
  grid-template-columns: repeat(auto-fill, minmax(10em, 1fr));
}
```



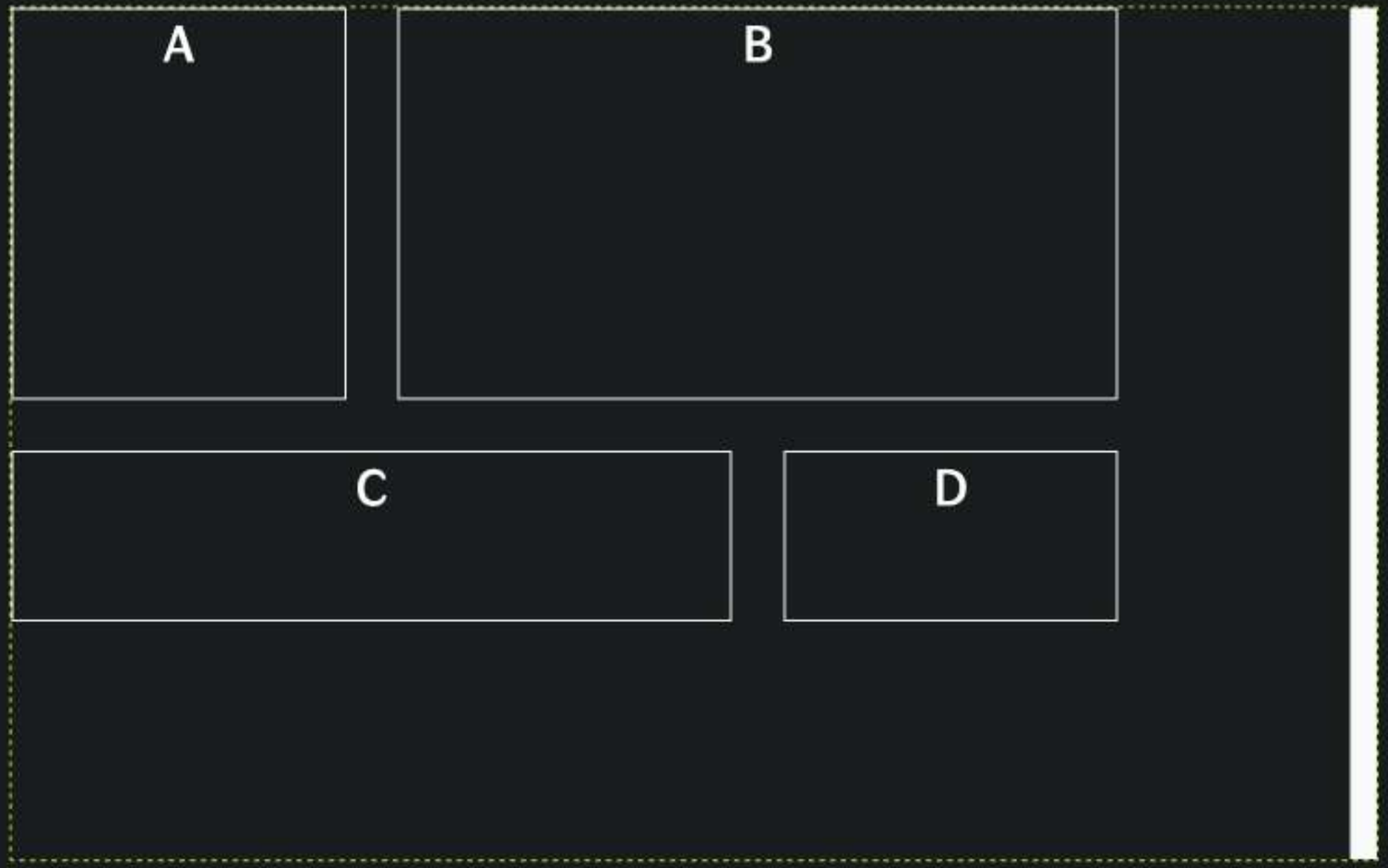
Aligning your grid items

Property	Axis	Aligns		Applies to
`justify-content`	main/inline	content within element (effectively adjusts padding)		block containers, flex containers and grid containers
`align-content`	cross/block			
`justify-self`	inline	element within parent (effectively adjusts margins)		block-level boxes, absolutely-positioned boxes and grid items
`align-self`	cross/block			absolutely-positioned boxes, flex items and grid items
`justify-items`	inline	items inside box (controls child items)		block containers and grid containers
`align-items`	cross/block			flex-containers and grid-containers

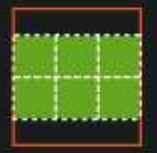
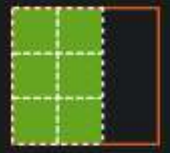
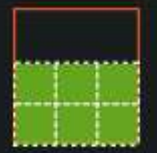
Source: CSS Box Alignment Module Level 3

justify/align-content

content-distribution properties

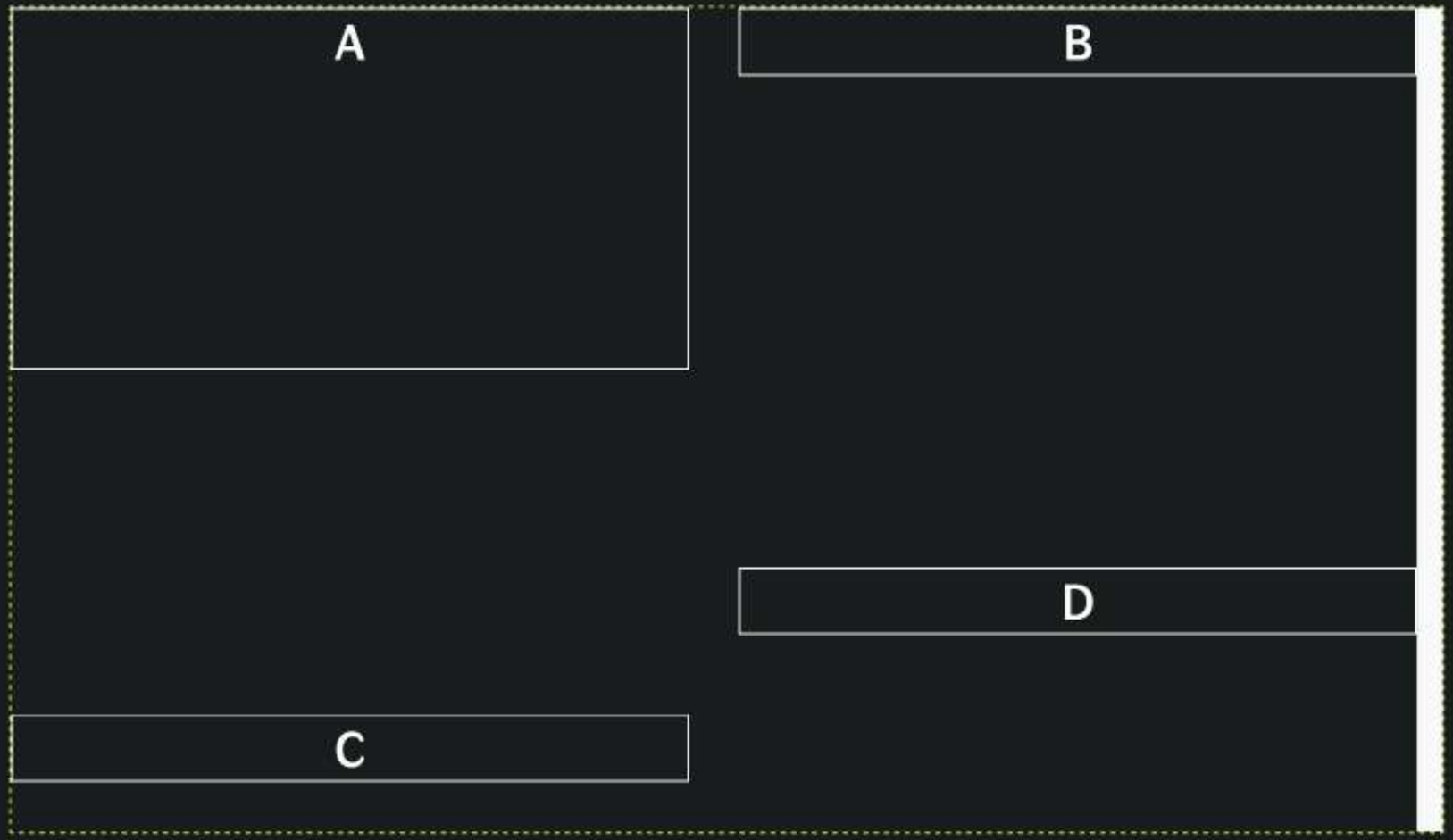



```
.content {
  justify-content: normal;
  align-content: normal;

  display: grid;
  grid-template-columns: repeat(3,
25%);
  grid-template-rows: repeat(3, 20%);
  grid-gap: 1em;
  grid-template-areas:
    "a b b"
    "a b b"
    "c c d";
}

.content_itemA {
  grid-area: a;
}
```

Values	justify-content	align-content
center		
start		
end		
space-around		
space-between		
space-evenly		

justify/align-self

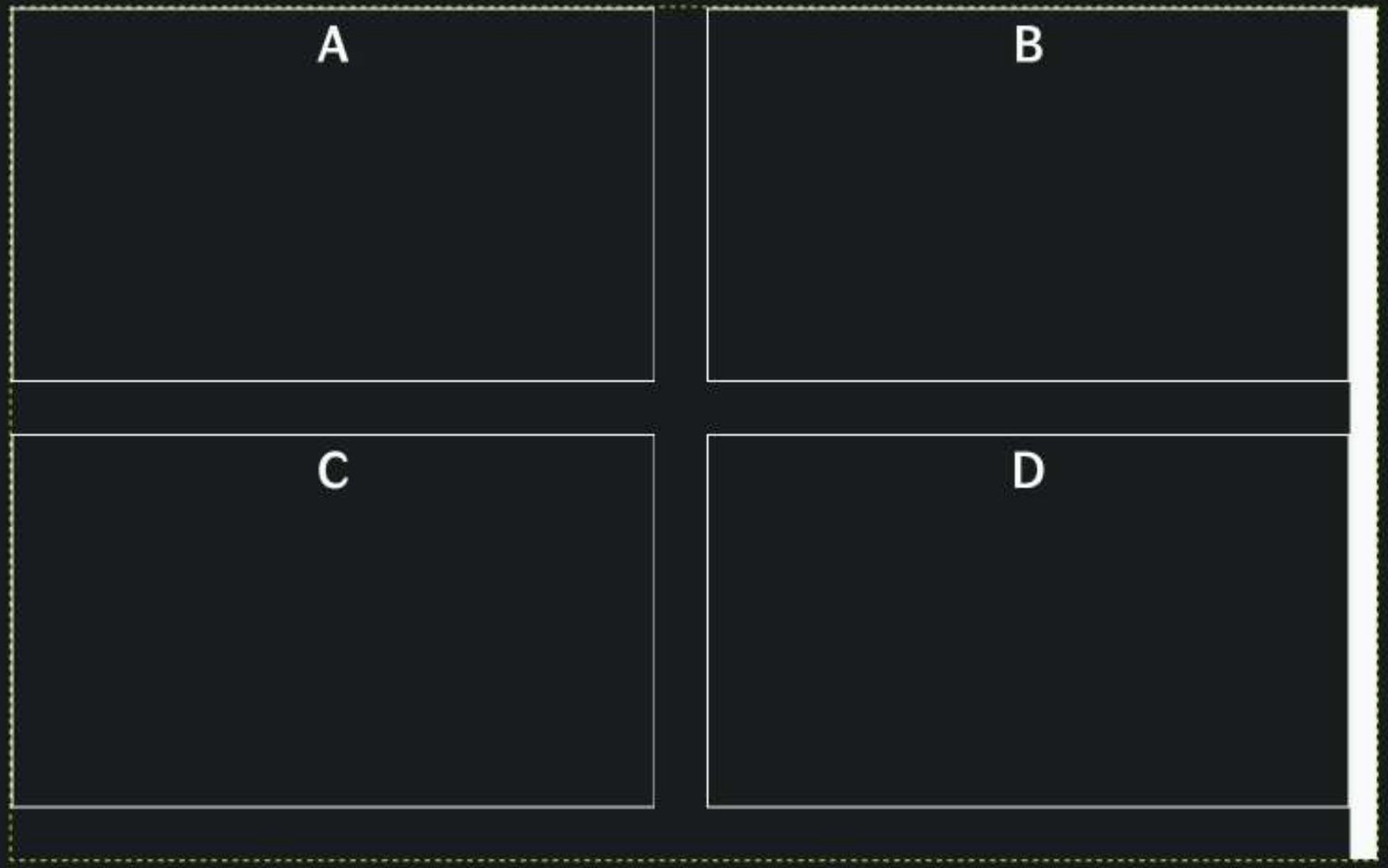
self-alignment properties



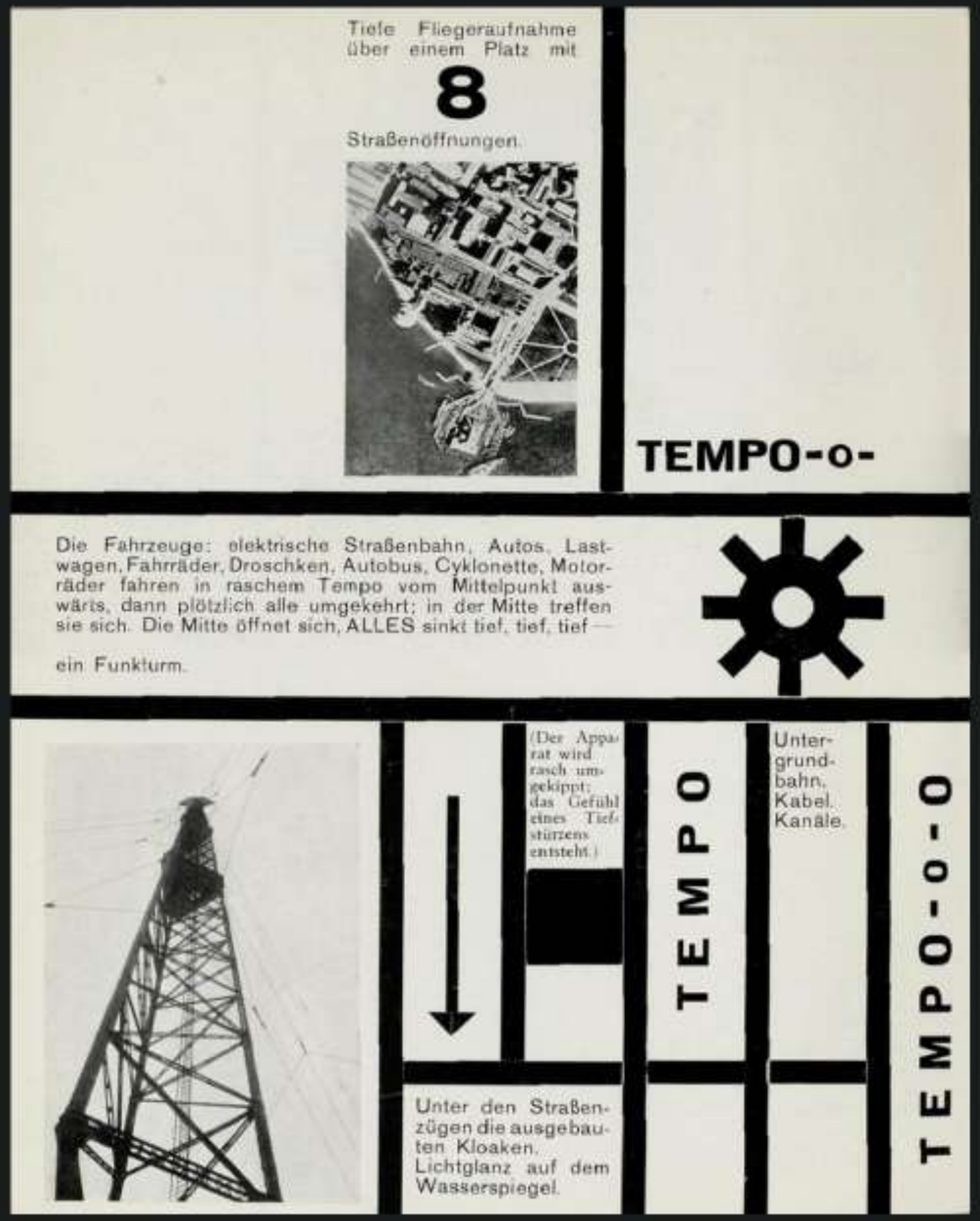

```
.self {
  display: grid;
  grid-template-columns: repeat(4,
1fr);
  grid-gap: 1em;
  grid-auto-rows: calc(25% - 1em);
  grid-template-areas:
    "a a b b"
    "a a b b"
    "c c d d"
    "c c d d";
}

.self_itemA {
  grid-area: a;
}

.self_itemB {
  grid-area: b;
```

justify/align-items

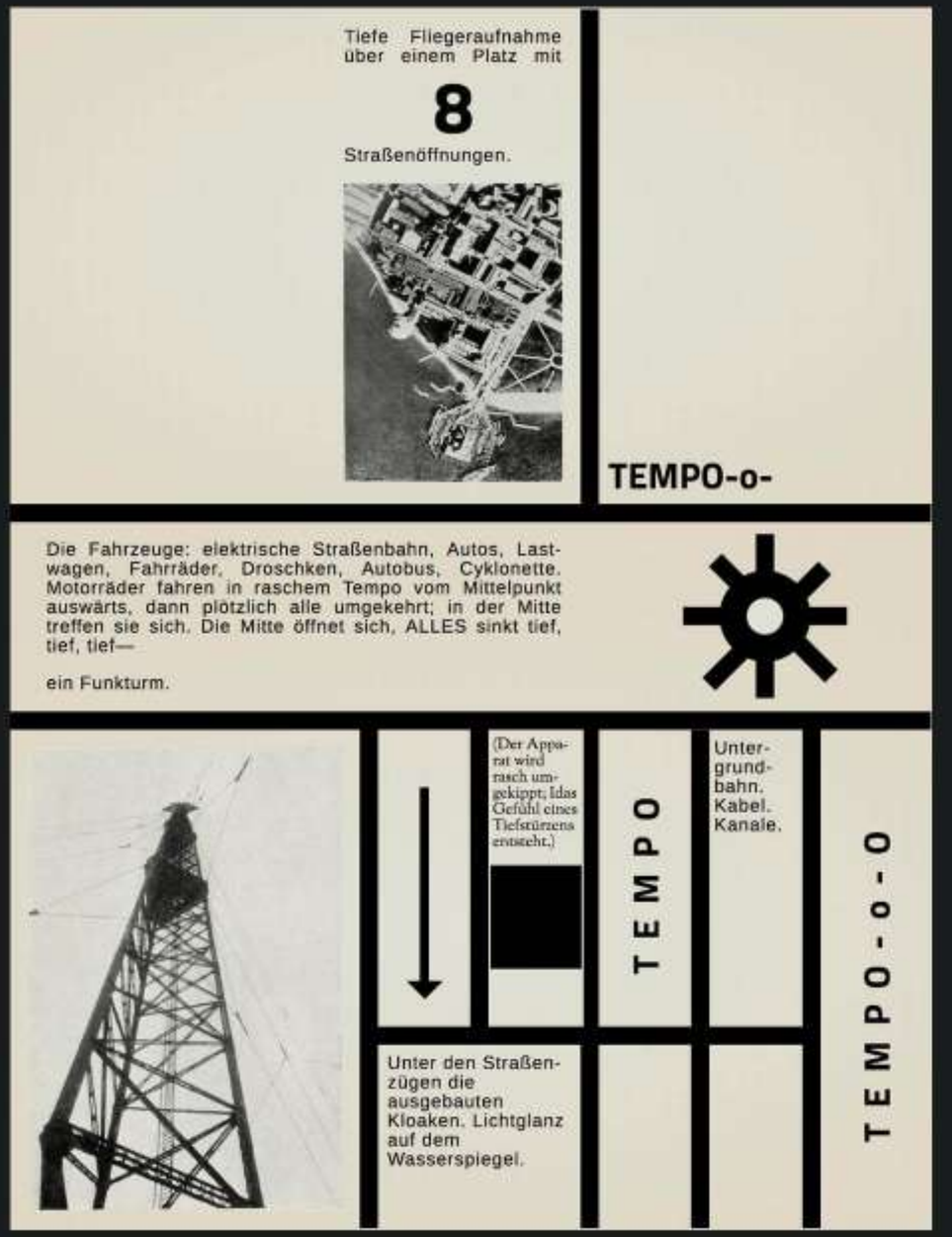
defaults for justify/align-self




```
.items {
  justify-items: normal;
  align-items: normal;

  display: grid;
  grid-template-columns: repeat(4,
1fr);
  grid-gap: 1em;
  grid-auto-rows: calc(25% - 1em);
  grid-template-areas:
    "a a b b"
    "a a b b"
    "c c d d"
    "c c d d";
}

.items_itemA {
  grid-area: a;
}
```



Original print version

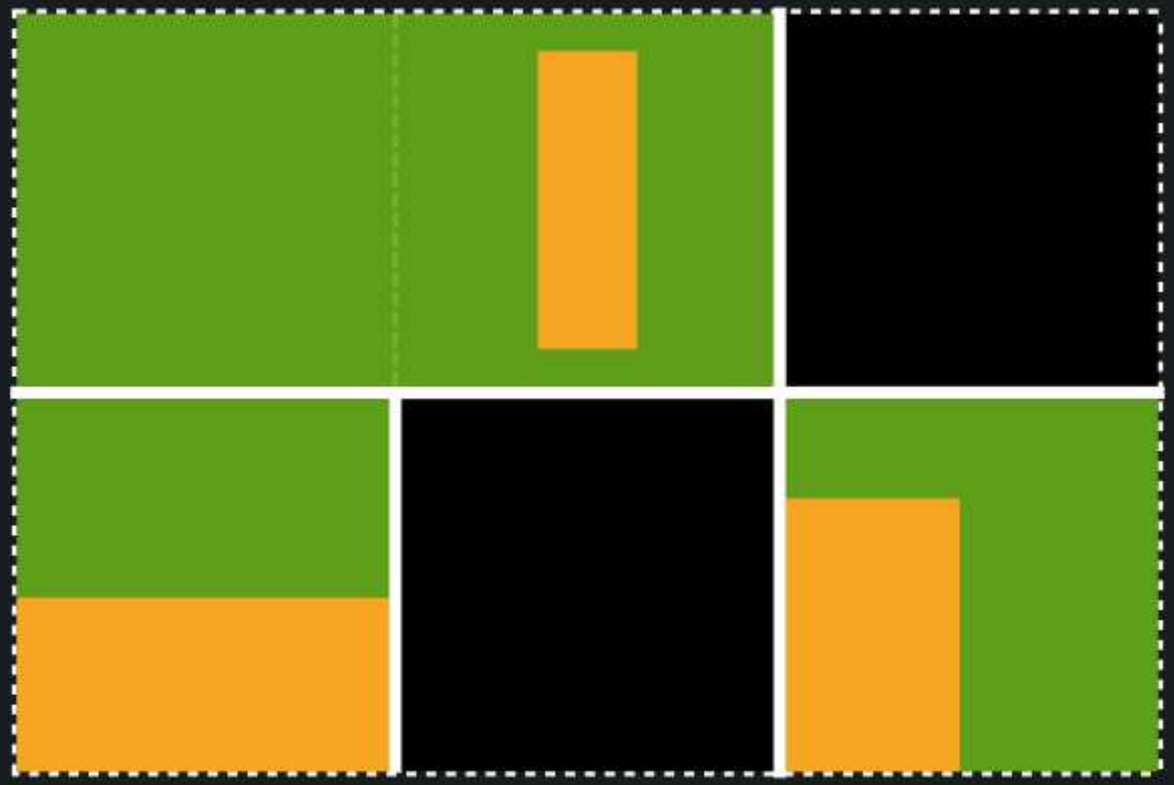


CSS grid web version

Self-alignment properties, maybe?

These are not the borders you are looking for

Flexbox to the rescue

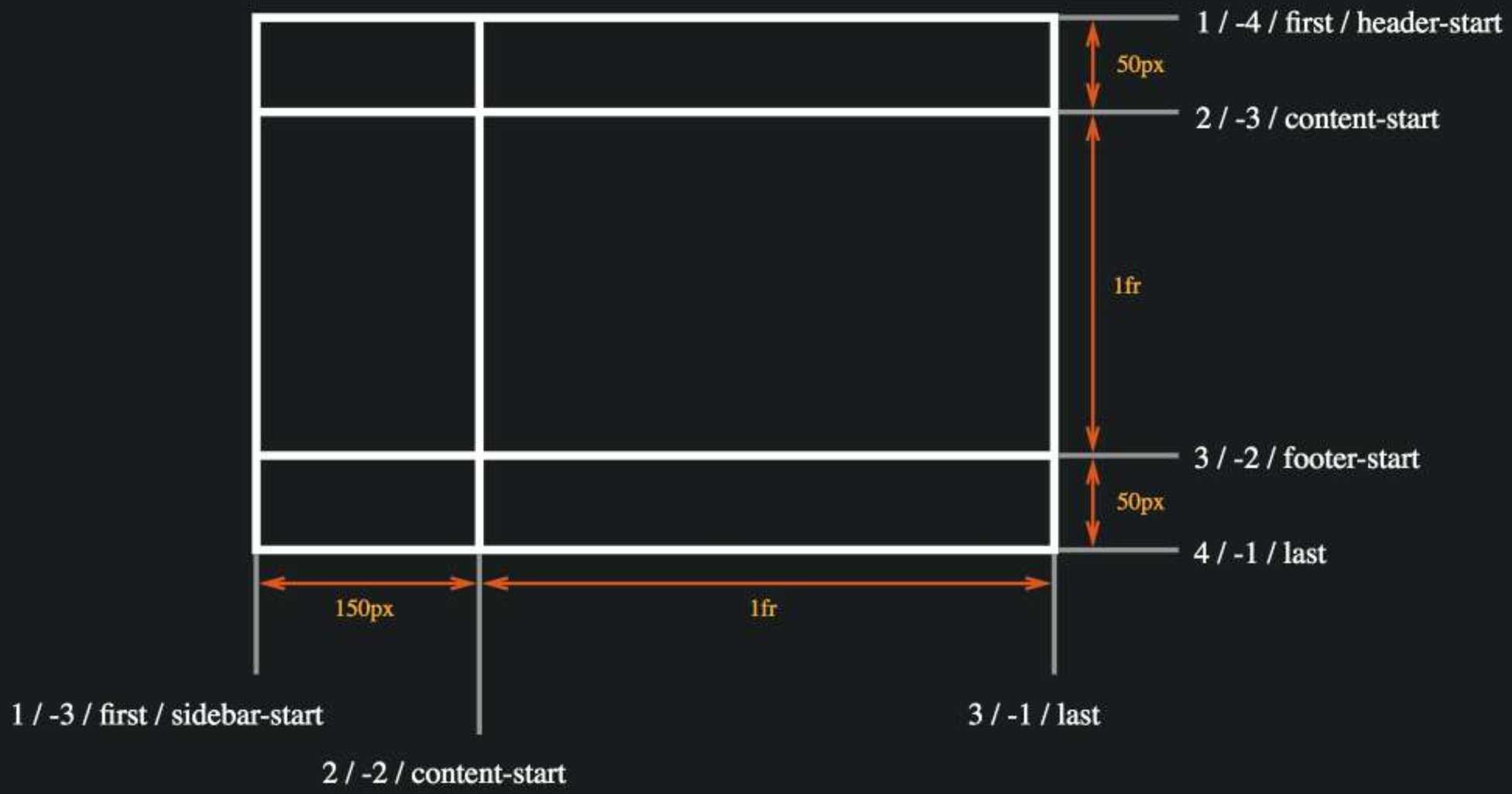


That's more like it

Properties on the grid item

Grid placement with grid lines / named lines

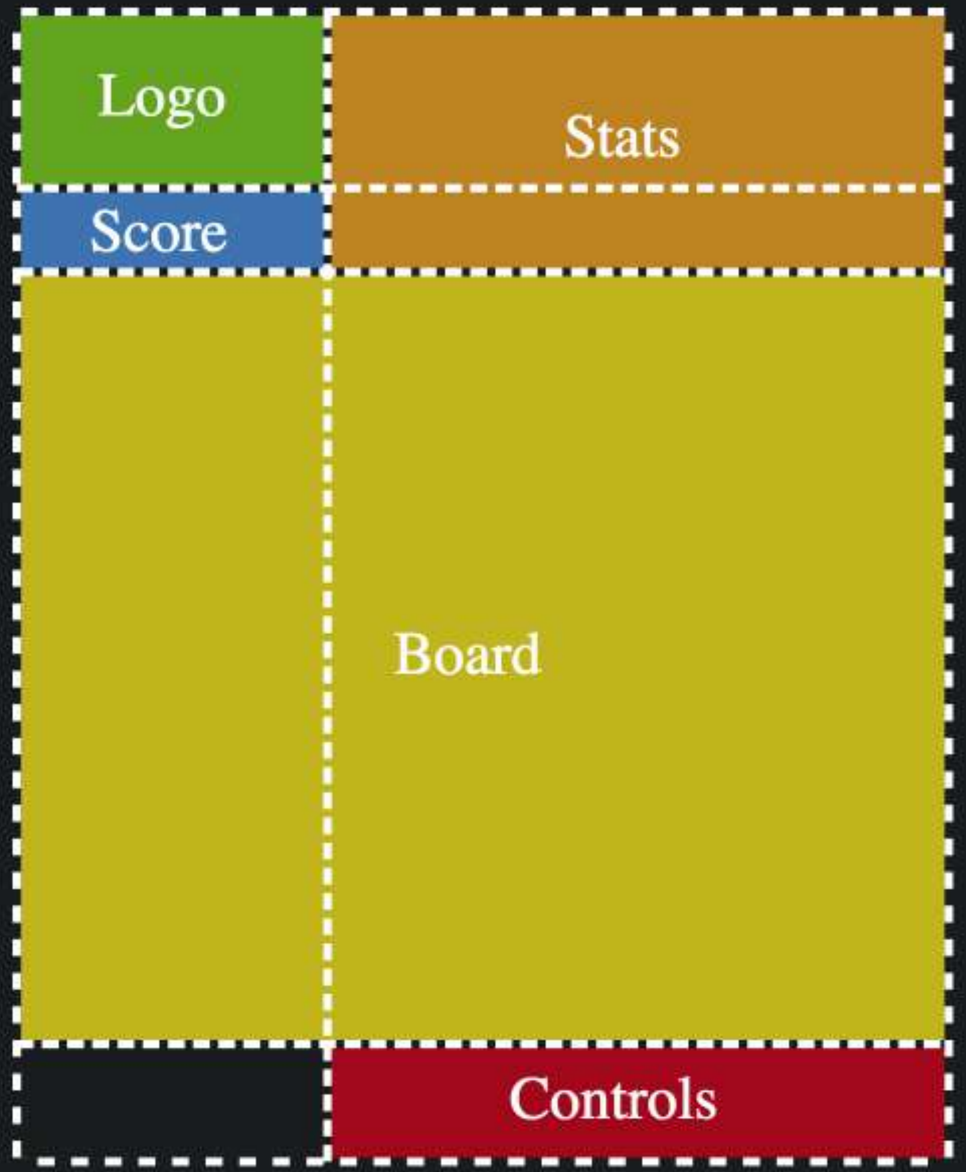
```
grid-template-columns: [first sidebar-start] 250px [sidebar-end content-start] 1fr [content-end last
grid-template-rows: [first header-start] 100px [header-end content-start] 1fr [content-end footer-st
```



Using grid-column and grid-row

```
.grid7 {
  display: grid;
  grid-template-columns: repeat(6,
2.6em);
  grid-template-rows: repeat(6,
2.6em);
  justify-content: center;
}

.grid7__item:nth-child(1) {
  grid-column: 4;
  grid-row: 2;
}

.grid7__item:nth-child(3) {
  grid-column: 2;
  grid-row: 5;
}
```

Grid placement with named areas




```
.grid-container {
  display: grid;
  grid-template-areas: "logo stats"
                       "score stats"
                       "board board"
                       "... controls";
}

.logo { grid-area: logo; }
.score { grid-area: score; }
.stats { grid-area: stats; }
.board { grid-area: board; }
.controls { grid-area: controls; }
```

Using grid areas

```
.grid3 {
  display: grid;
  grid-template-columns: 150px
150px 150px 150px;
  grid-template-rows: 100px 100px
100px;
  grid-template-areas: 'a . . .'
                       'a . . c'
                       '. b . c';
}

.grid3 .a { grid-area: a; }
.grid3 .b { grid-area: b; }
.grid3 .c { grid-area: c; }
```

C•NNE
CTING
THE
D•TS

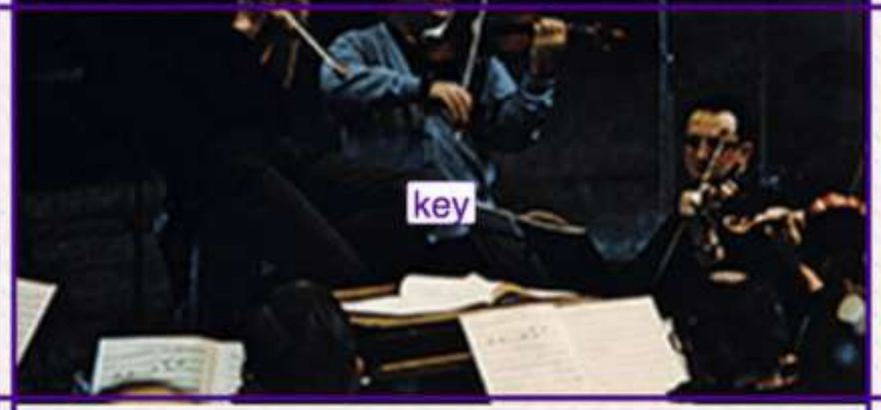
Vertical whitespace

Founded in 2005, Whitespace is a culturally savvy design agency providing creative direction, branding and interactive services across various mediums, platforms and time zones.

Braun HiFi Steuergerät audio 300

title

In der modernen Aufnahmetechnik ist keine Mühe zu groß, kein Aufwand zu kostspielig, um auch allerletzte Feinheiten einer Interpretation zu erhalten.



Demgegenüber gibt es aber nur wenige HiFi Ger text lie es fertigbringen, den ganzen Nuancenreichtum wieder vollends hörbar zu machen.

Ein Gerät mit diesen Fähigkeiten ist das neue "audio 300", eine Kompaktanlage mit ungewöhnlicher technischer Ausrüstung und einem formalen Konzept, das Braun höchste internationale Auszeichnungen eintrug.

text

BRAUN

Braun HiFi Steuergerät audio 300

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text

braun

BRAUN

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title

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text

text

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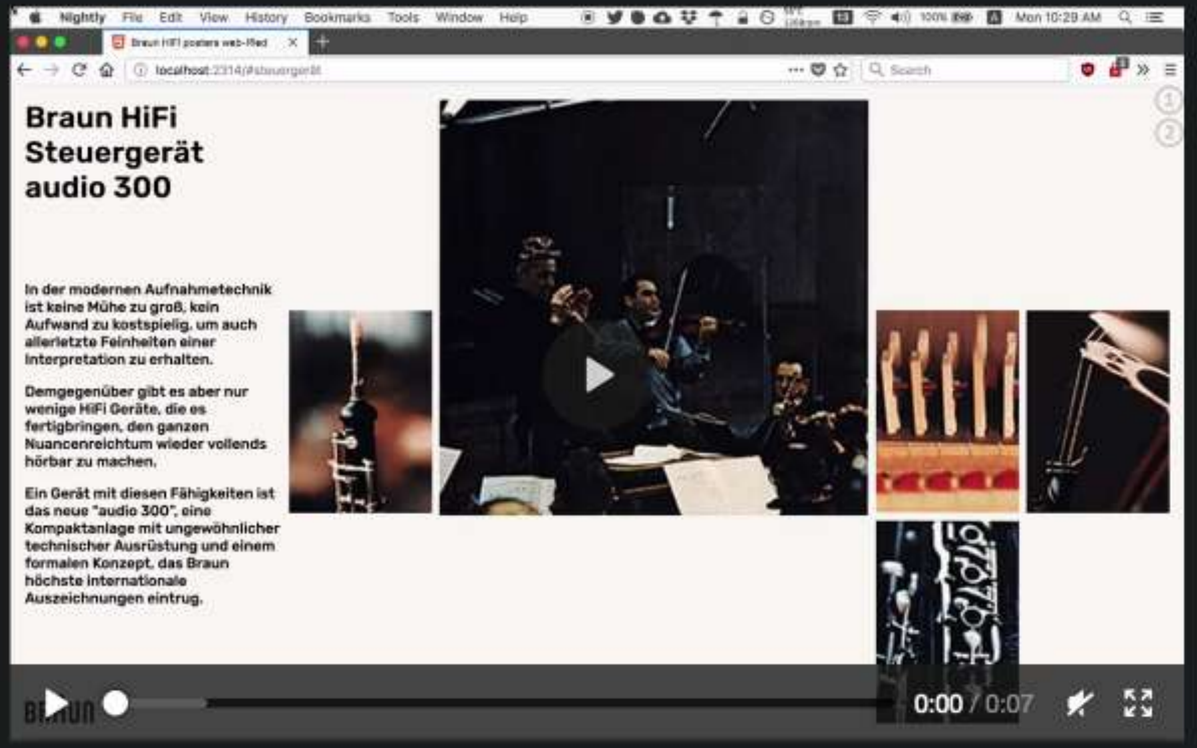
BRAUN




```
.steuergerät {
  grid-gap: 0.5em;
  grid-template-columns: 50% 50%;
  grid-template-areas: "title title"
                       "text text"
                       "key key"
                       "detail1 detail2"
                       "detail3 detail4";
}

@media screen and (min-aspect-ratio: 1/1) and (min-height: 22em) {
  .steuergerät {
    grid-template-columns: 18.75em 1fr 1fr 1fr;
    grid-template-rows: calc((100vh - 3em) / 3) calc((100vh - 3em) /
    grid-template-areas: "title detail1 key key"
                         "text detail2 key key"
                         "text detail3 detail4 braun";
  }
}

@media screen and (min-aspect-ratio: 8/5) and (min-height: 36em) {
  .steuergerät {
    grid-template-columns: 17.5em 1fr 3fr 1fr 1fr;
    grid-template-rows: calc((100vh - 3em) / 3) calc((100vh - 3em) /
    grid-template-areas: "title . key . ."
                         "text detail1 key detail2 detail3"
                         "text . . detail4 .";
  }
}
```

GENERATION H

Overlap

H55

Tuesday 10th May
Hanson Ho

With his bold, stripped-back typographic approach, Hanson Ho founded H55 in 1999. It is now one of the most recognised and celebrated graphic design studios in Singapore.

HANSON HO IS VERY BUSY. AS WELL AS RUNNING H55, HE IS AN ACTIVE MEMBER OF THE DESIGN SOCIETY AND HANDLES DESIGN AND PRODUCTION OF THEIR BIANNUAL JOURNAL. HOWEVER, WE MANAGE TO ARRANGE AN EARLY MEETING OVER BREAKFAST AT SHIBLY PRATA SHOP NEAR THE STUDIO. WE OPEN BY SAYING THAT SINGAPORE IS FREQUENTLY MENTIONED AS THE GRAPHICS HUB OF SOUTHEAST ASIA...

HANSON I think Hong Kong is very vibrant compared to Singapore. They've had a very strong identity throughout the years, even in the eighties. I think it has to do with language and less diversity, whereas here, identity is always a problem. Look at Japan and, yeah,

much influenced by Europe. Less culture and tradition. So I'm quite surprised you say that Hong Kong has a wider creative industry – they have a music industry, places like Taiwan have big stars, movie stars, film makers. Here there is nothing like that, the population is too small.

How you view any changes in the time you've been designing here?

Things have changed here a lot in the last ten years. The last generation was kind of traditional, quite hierarchical – studios, consultants, strategists, that kind of thinking from the nineties. Not very progressive. My peers didn't want to be like our predecessors, so we say "why can't we be like the studios in London?" We actually referenced London a lot, that's the truth. We admired people like Tomato and the Designers Republic, we read Creative Review and wanted to get into D&AD. Things like that. It was kind of a renaissance, if you were there at the right time to witness all of this. And as we started up our own small studios with a more independent voice – the studios had their own individualistic representation, rather than consultants, strategists blah blah blah... So I think things have changed a lot. It's easier now to set up a new business with new technology, we don't need a studio manager

So, as well as your own studio, you also co-run The Design Society here in Singapore. How did things start out?

The Design Society is fairly new, it was set up a few years ago when the designers from my generation were stable and not struggling as much as when we started. We felt we should try to do something together.

What are the objectives of The Design Society?

We are interested in archiving Singapore design history, to map it, and also to offer a more yearly conference. We have maybe four or five casual lectures a year

THINK GLOBAL GROW LOCAL

FIGTREE NETWORK

Wednesday 27th April
David Brabbins

Already an established consultancy in London and Paris, Figtree Network branched out to Hong Kong in 2010. David Brabbins tells us why

WE FIND THE OFFICES OF FIGTREE NETWORK TUCKED AWAY IN A QUIET BUT COOL STREET IN THE WANCHAI DISTRICT OF THE CITY. AFTER VISITING THE MONOCLE STORE ACROSS THE ROAD, WE POP IN TO CHAT WITH DAVID AND OUR CONVERSATION QUICKLY LEADS TO THE RISE OF THE CREATIVE SECTOR IN HIS NEW HOMELAND.

DAVID I think there is a push going on, though not as strongly as in Singapore, which is a shame. In Hong Kong the government have identified the creative industry as one of six areas of growth as they try to expand beyond finance, property and shipping.

We've learned that in Hong Kong technique and production standards are high, but actual design perhaps less so.

Sure, this is the big leap that Asian businesses, especially Chinese businesses need to make. We've had the experience of going through that process with HTC. Many businesses are not yet ready to make the leap, so our first strategy when we came here was to help Asian businesses build global brands. But it's not as simple as just doing communications. They have to invest quite heavily in a long term strategy, acquire new competencies they never had: innovation, marketing. It is a big jump for companies that are used to making things for other people, and not designing things for themselves. HTC was a bit further along because they designed stuff for mobile networks so they had all the competen-

How did Figtree Network get started?

We are about seven years old. Orange was the foundation client. I joined shortly after it was incorporated. You need eight good clients for an agency. HTC is our most recent large one and we have a couple more big ones in the UK right now.

OK, so how many offices does Figtree have?

Three. We've got London – which is our HQ – there are about forty people there. About three or four work in Paris, then eight of us here in Hong Kong.

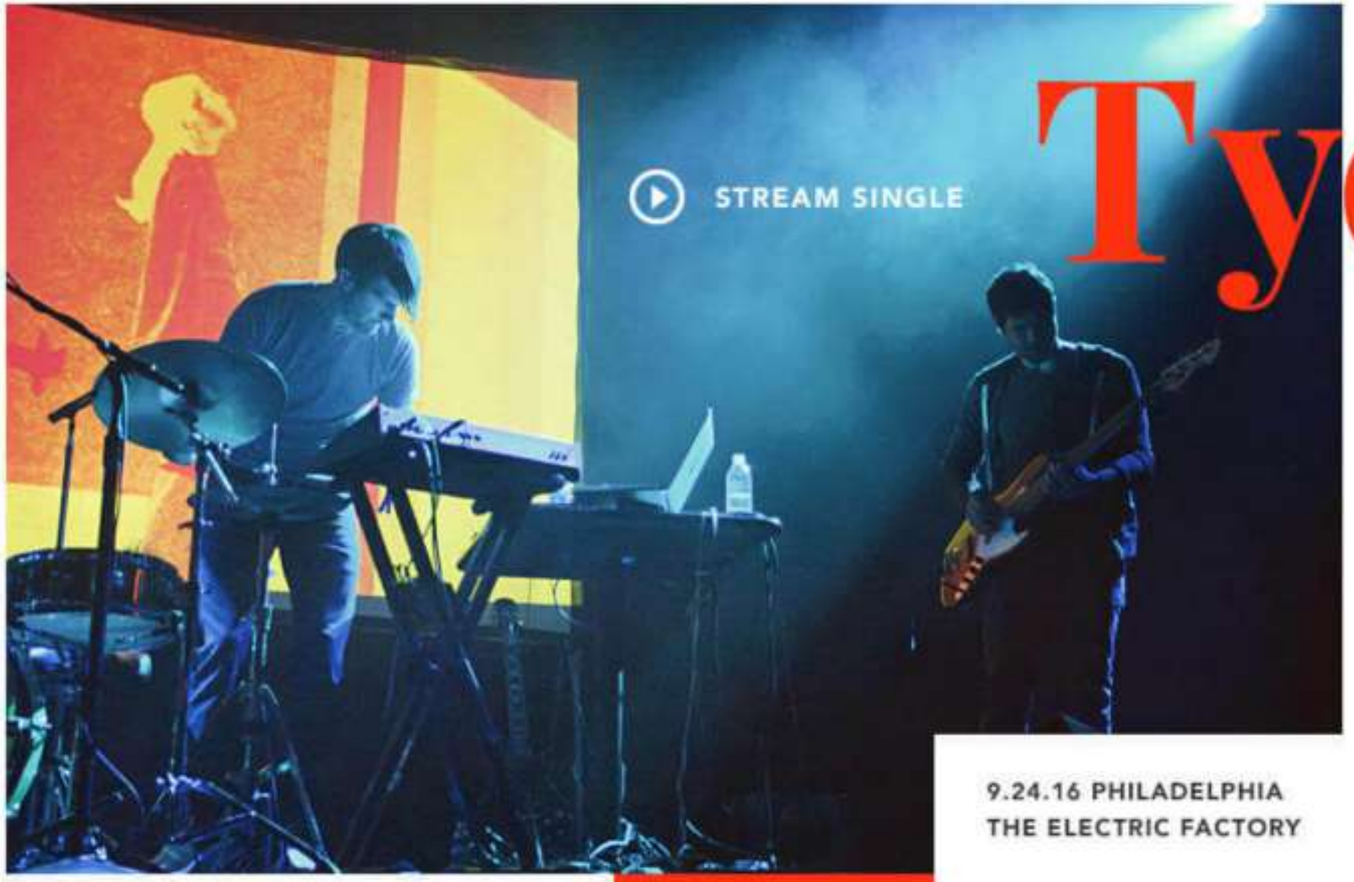
Did you initially work in the London branch?

Yeah. Back in the days when we were three guys in a garage, just like Google!

What brought you to Hong Kong?

Opportunity and change of scene. I was getting a bit bored with London; the weather (not the heat), high tax, low growth... I found that I kept stopping over at Hong Kong when I was on my way to Taiwan to meet with HTC. I used to come here before flying back to London to catch up with some mates. I gradually fell in love with the place, so I thought "Well, what we do could work here," so here we are.

Building a grid layout



TOUR DATES

ARTIST SPOTLIGHT

Tycho

Earlier this year, San Francisco-bred artist and designer Tycho announced a new album on the way for 2016, but gave scant details about the project, leaving fans to speculate about just what the ambient master had in store. Fans need no longer worry, as Tycho's fifth studio album, Epoch, has arrived in grand fashion.

9.24.16 PHILADELPHIA
THE ELECTRIC FACTORY

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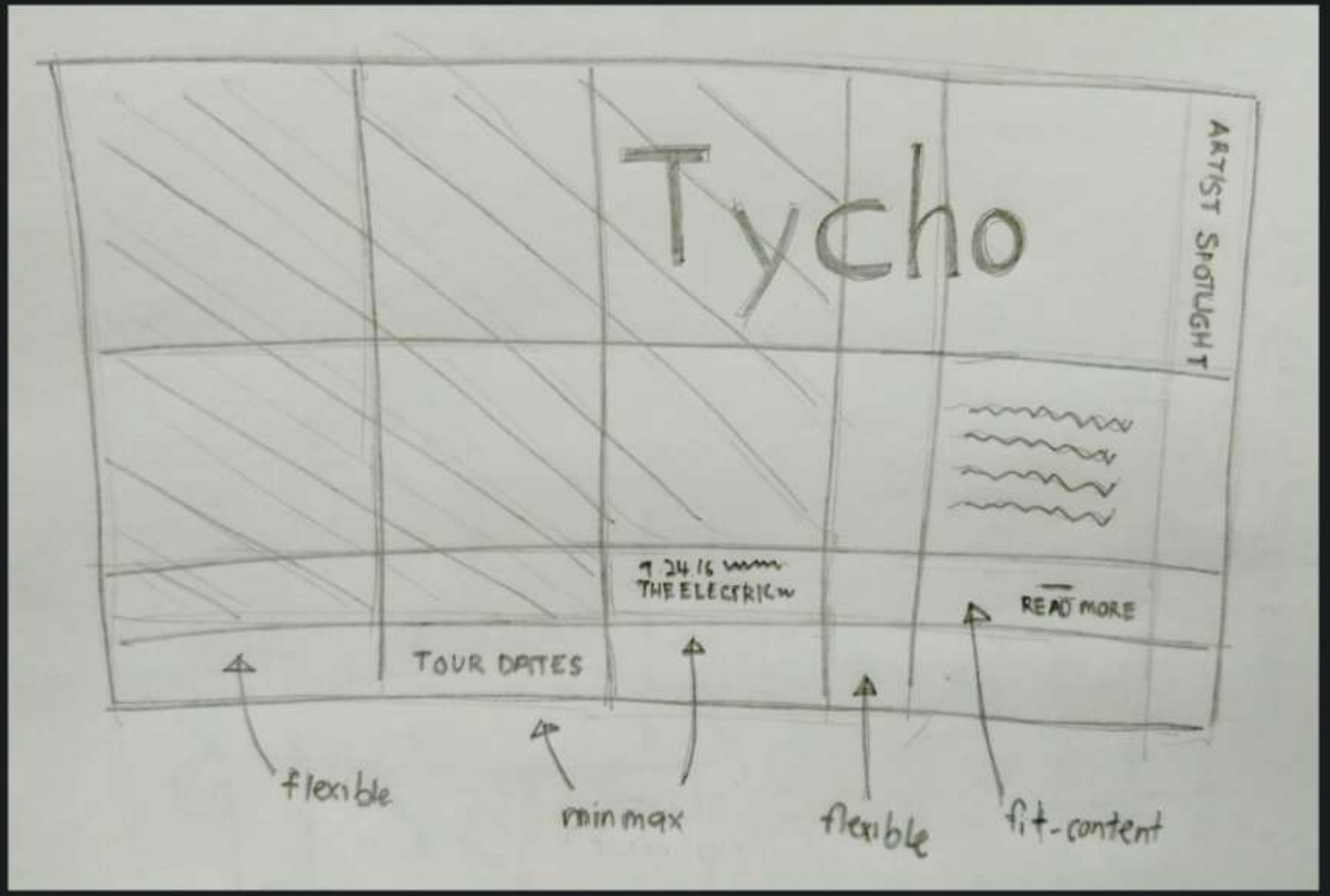

Good ol' pencil and paper

Tycho

Artist Spotlight

Tycho is an American ambient music project led by Scott Hansen as primary composer, songwriter and producer. Hailing from San Francisco, California, he is known as ISO50 for his photographic and design works. His music is a combination of downtempo vintage-style synthesizers and ambient melodies.

Read more

10.2.2010 Toronto
The Drake Hotel

Tour dates

Markup without any CSS

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10.2.2010 TORONTO
THE DRAKE HOTEL
TOUR DATES

Basic styles

“Websites do **NOT** have to look the same in every browser.”

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TOUR DATES

Fallback layout

```
main {
  max-width: 45em;
  margin: 0 auto;
  position: relative;
  padding: 1em;
}

_:-ms-input-placeholder, :root main {
  display: block;
}

h1 {
  margin-bottom: 0.25em;
}

h2 {
  margin-bottom: 1em;
}

.about {
  margin-bottom: 1em;
}

a {
  margin-bottom: 2em;
}

button {
  padding: 1em 2em;
```

CSS grid in action

```
@supports (display:grid) {
  @media (min-width: 42em) and (min-height: 27em) {
    main {
      max-width: none;
      padding: 0;
      display: grid;
      grid-template-columns: 2fr minmax(10em, max-con
      grid-template-rows: 35vh 40vh 15vh 10vh;
    }

    h1 {
      grid-column: 3 / 6;
      grid-row: 1 / 2;
      z-index: 2;
      padding-left: 0.25em;
      margin-bottom: initial;
    }

    h2 {
      grid-row: 1 / -1;
      grid-column: 6 / 7;
      writing-mode: vertical-rl;
      margin-bottom: initial;
      color: $text;
    }

    hr {
      grid-column: 5 / 6;
      grid-row: 2;
```

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0:00 / 0:09

Fallback with feature queries

A conditional group rule whose condition tests whether the user agent supports CSS property: value pairs.

Anatomy of a feature query

```
.selector {
  /* Styles that are supported in old browsers */
}

@supports (property:value) {
  .selector {
    /* Styles for browsers that support the specified property */
  }
}
```

Browser support for `@supports`

CSS Feature Queries

CSS Feature Queries allow authors to condition rules based on whether particular property declarations are supported in CSS using the @supports at rule.

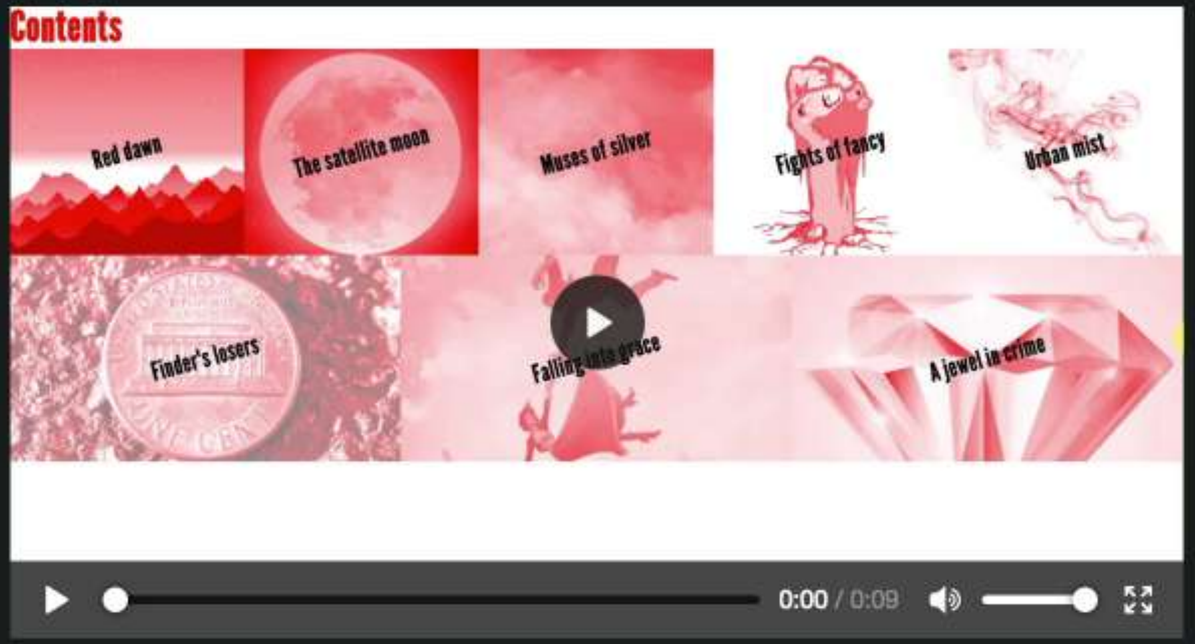
IE	Edge	Firefox	Chrome	Safari	iOS Safari	Opera Mini	Chrome for Android	Android Browser	Samsung Internet
9	14	56	62	10	10.2			4.4	4
10	15	57	63	10.1	10.3			4.4.4	5
11	16	58	64	11	11.2	all	64	62	6.2
	17	59	65	11.1	11.3				

✓ ✗ Partial Support

Global: 93.52% + 0% = 93.52%

Data from caniuse.com | Embed from caniuse.bitsofco.de

Enable accessible colours




```
main {
    display: flex;
    flex-wrap: wrap;
    justify-content: space-between;
  }

  .title {
    width: 100%;
  }

  .card {
    flex: auto;
    min-width: 12em;
    height: 12em;
  }
```

```
@supports (display:grid) {
    main {
      display: grid;
      grid-template-columns: repeat(auto-fill, m
      grid-auto-rows: 8em;
    }

    .title {
      width: initial;
    }

    .card {
      min-width: initial;
      height: initial;
    }

    @media screen and (max-width: 383px) {
      main {
        grid-template-rows: 3em repeat(auto-fill
      }
    }

    @media screen and (min-aspect-ratio: 1/1) {
      main {
        grid-template-columns: repeat(4, minmax(
        grid-template-rows: repeat(3, calc(100vh
        grid-template-areas: "a b c ."
                             "d e . f"
                             "g . h i";
```

“CSS isn't a programming language. It's a stylesheet language. We shouldn't expect it to behave like a programming language. It has its own **unique landscape and structures**, ones that people with programming language mental maps might not expect.”

—Danielle Huntrods

Demos and examples

- Space Jam website
- Regular grids
- Malerei, Fotografie, Film (pg. 126)
- Braun HiFi print posters
- Simple overlap
- Tycho artist profile
- Fallback with feature queries
- Wismut Labs website
- Demos source code on GitHub

Useful references

- CSS Grid Layout Module Level 1
- Codrops CSS Grid reference
- Grid by Example
- Learn CSS Grid
- Grid Auto-Placement Is Ready
- Automatizing the Grid
- Deep Dive into Grid Layout Placement
- CSS Grid Layout and positioned items
- The Story of CSS Grid, from Its Creators
- CSS Grid Layout is Here to Stay
- The New Layout Standard For The Web: CSS Grid, Flexbox And Box Alignment

THANK YOU!

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Font used is Faune, Alice Savoie / Cnap