

CSS Layout

The Visual Formatting Model

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Notes & URLs for this presentation can be found...

- » underneath the link to this slide show on granneman.com
- » at files.granneman.com/presentations/webdev/CSS-Layout.txt

HTML

```
1 <ul class="flex-container">
2   <li>The odd mechanism of the
   hooked fastener</li>
3   <li>was perfectly well known to
   me</li>
4   <li>and I snapped up the still
   rustless and workable lid and drew
   out the book within.</li>
5   <li>The latter, as expected, was
   some twenty by fifteen inches in
   area</li>
6   <li>and two inches thick; the
   thin metal covers opening at the
   top.</li>
7 </ul>
```

CSS (SCSS) Compiled

```
1
2
3
4
5
```

JS

1. The odd mechanism of the hooked fastener	2. was perfectly well known to me	3. and I snapped up the still rustless and workable lid and drew out the book within.	4. The latter, as expected, was some twenty by fifteen inches in area	5. and two inches thick; the thin metal covers opening at the top.
---	-----------------------------------	---	---	--

Up to now, the order of your code determined the order of rendered layout in the viewport


```
HTML
1 <ul class="flex-container">
2   <li>The odd mechanism of the
   hooked fastener</li>
3   <li>was perfectly well known to
   me</li>
4   <li>and I snapped up the still
   rustless and workable lid and drew
```

```
CSS (SCSS) Compiled
1 .flex-container {
2   display: flex;
3 }
4 .flex-container > *:nth-child(1) {
5   order: 2;
6 }
7 .flex-container > *:nth-child(2) {
8   order: 1;
9 }
10 .flex-container > *:nth-child(3) {
11   order: 0;
12 }
13 .flex-container > *:nth-child(4) {
14   order: 0;
15 }
16 .flex-container > *:nth-child(5) {
17   order: -1;
18 }
```

```
JS
```

5. and two inches thick; the thin metal covers opening at the top.

3. and I snapped up the still rustless and workable lid and drew out the book within.

4. The latter, as expected, was some twenty by fifteen inches in area

2. was perfectly well known to me

1. The odd mechanism of the hooked fastener

Using CSS, the order of the rendered layout may not always be in the same order as your code

The CSS *visual formatting model* is an algorithm used by the rendering engine to:

- » Use the DOM & CSSOM to figure out what boxes to generate
- » Use the formatting context to determine the layout of the boxes
- » Use the box model to size the boxes
- » Use positioning schemes to adjust placement of the boxes

display

`display` is a foundational CSS property that touches all aspects of the visual formatting model

block	inline-flex	ruby-base
block flow	inline-grid	ruby-text
contents	inline-table	ruby-text-
flex	list-item	container
flex run-in	list-item block	run-in
flow	list-item block	table
flow list-item	flow	table-caption
block	list-item block	table-cell
flow-root	flow-root	table-column
grid	list-item flow	table-column-group
inherit	list-item flow-	table-footer-group
initial	root	table-header-group
inline	list-item inline	table-row
inline table	none	table-row-group
inline-block	ruby	unset

These are *some* of the values for the `display` property!

The values for `display` are now categorized into these data types:

- » `<display-outside>`
- » `<display-inside>`
- » `<display-listitem>`
- » `<display-internal>`
- » `<display-box>`
- » `<display-legacy>`

The legacy way of thinking about `display` properties — which is still very well supported — used single keywords: `block`, `inline`, `inline-block`

The new way — which is not fully supported by any browser — may use *multiple keywords*; e.g., `block flow` or `block flex`


These are categories used with multiple keywords that can be mixed & matched:

- » `<display-outside>`
- » `<display-inside>`
- » `<display-listitem>`

On the previous slide, `display: block flow` can be categorized like this: `display: <display-outside>`
`<display-inside>`

These are also categories for `display` that are *not* used with multiple keywords:

- » `<display-internal>`
- » `<display-box>`
- » `<display-legacy>`

display:					ios		
multi-keyword values	—	—	70	—	—	—	—

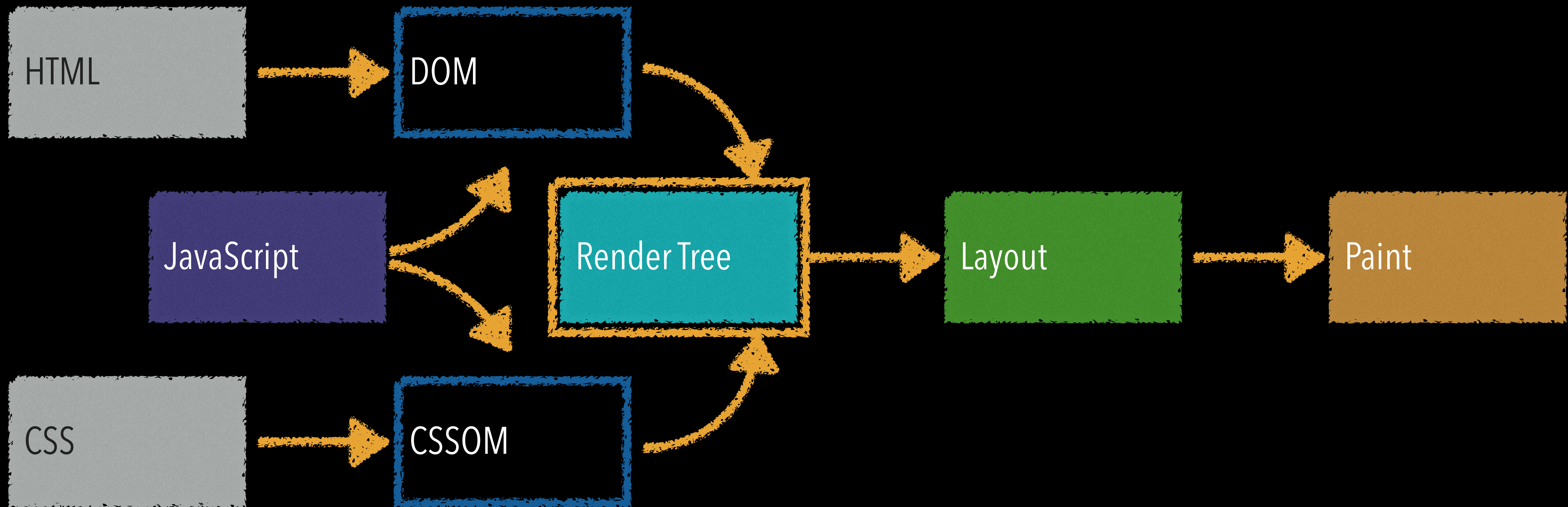
We will mention `display` in this set of slides as appropriate

Boxes

Remember: when you're working with CSS, you are manipulating boxes

A close-up photograph of a Box Tree (Buxus sempervirens) showing its characteristic small, rounded, glossy green leaves. The leaves are arranged in dense, upright clusters along woody stems. The background is blurred, showing more of the same foliage.

Box Tree



The *render tree* is a formula describing how the page will be drawn, including colors, fonts, & boxes

Part of the render tree is the *box tree*, which specifies...

- » all the boxes that are going to be drawn on the page,
- » their order,
- » & how they're nested

Boxes in the render tree are either...

- » elements
- » pseudo-elements
- » anonymous

Most elements generate boxes, even if you don't think about them

For example, all the elements in a table generate boxes:
<table>, <thead>, <tbody>, <tr>, <th>, <td>, &
<tfoot>

Pseudo-elements like `::before` & `::after` also generate boxes

An *anonymous box* is not an element or pseudo-element, but is generated by the rendering engine for layout purposes

Anonymous boxes are...

- » not in the DOM
- » not addressable via CSS or JavaScript

HTML

1

2The Shadow Kingdom

3

4

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10

11

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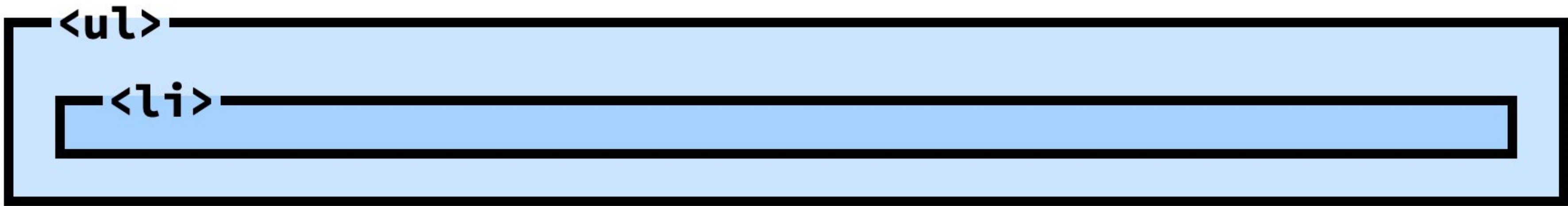
24

25

CSS (SCSS)

JS

- **Title:** The Shadow Kingdom



HTML

1

2The Shadow Kingdom

3

4

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12

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CSS (SCSS)

JS

- **Title:** The Shadow Kingdom



HTML

1

2The Shadow Kingdom

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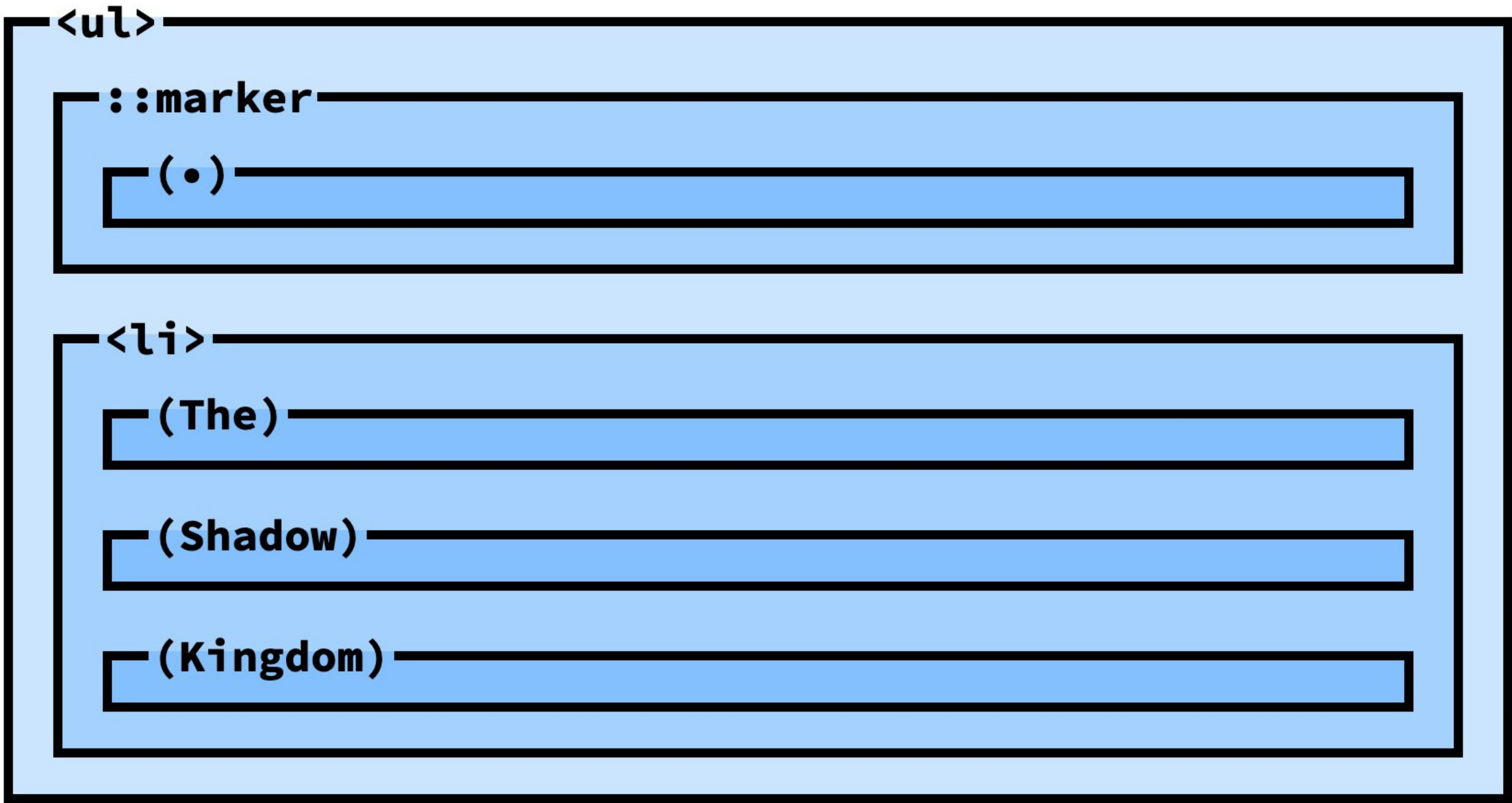
24

25

CSS (SCSS)

JS

- **Title:** The Shadow Kingdom



HTML

1

2The Shadow Kingdom

3

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10

11

12

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CSS (SCSS)

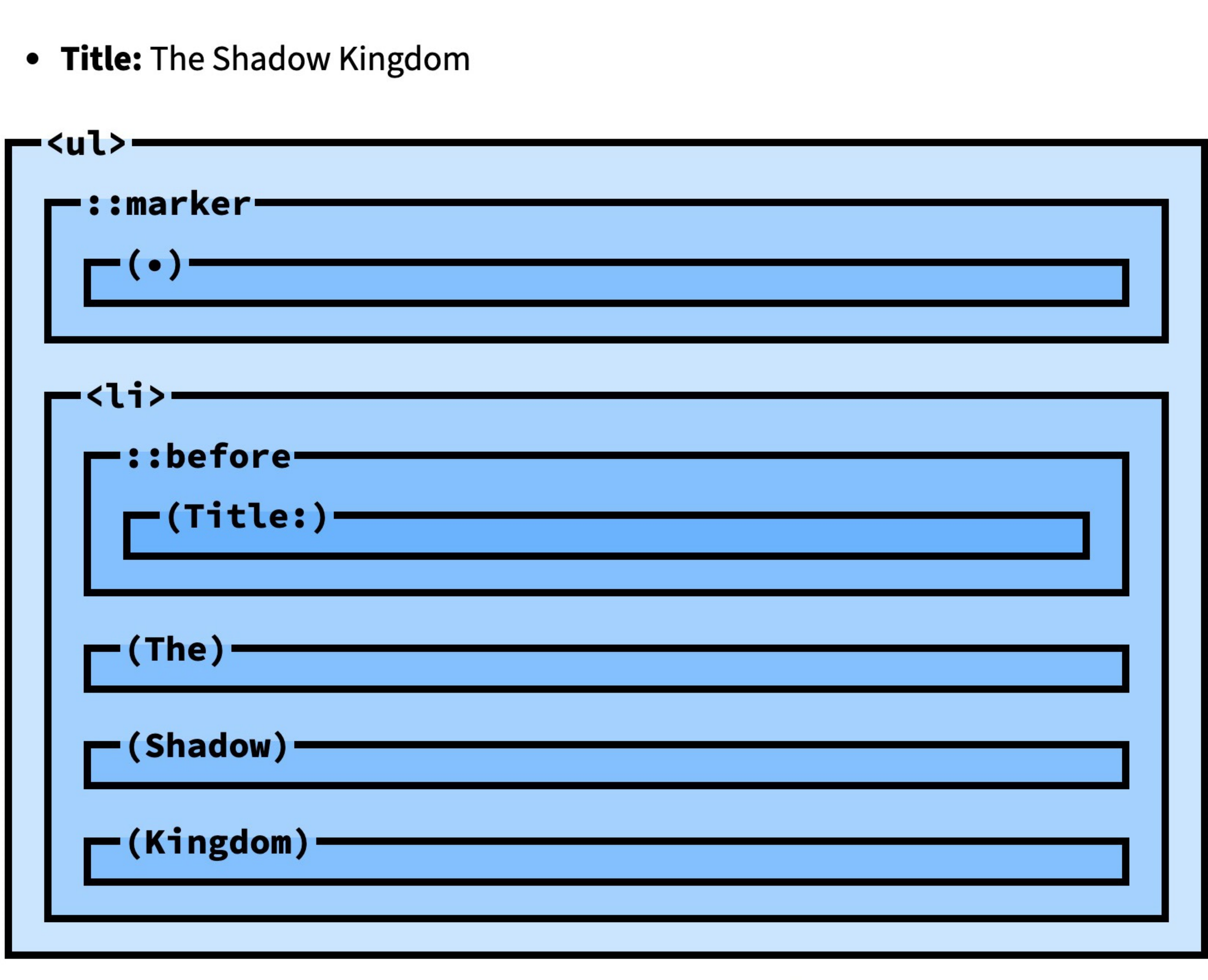
1li::before {

2content: "Title: ";

3font-weight: bold;

4}

JS



Box Model

What are the parts that make up a box?

I buy a vase for a present



In order to protect it, I put
it in a box with packing
peanuts



Finally, I wrap the box in
wrapping paper



Margin

Wrapping

Border

Cardboard Box

Padding

Packing

Content

Vase

Friday morning Armitage, Rice, and Morgan set out by motor for Dunwich, arriving at the village about one in the afternoon. The day was pleasant, but even in the brightest sunlight a kind of quiet dread and portent seemed to hover about the strangely domed hills and the deep, shadowy ravines of the stricken region.

Margin

Border

Padding

Content

Friday morning Armitage, Rice, and Morgan set out by motor for Dunwich, arriving at the village about one in the afternoon. The day was pleasant, but even in the brightest sunlight a kind of quiet dread and portent seemed to hover about the strangely domed hills and the deep, shadowy ravines of the stricken region.


Margin

Border

Padding

Friday morning Armitage, Rice, and Morgan set out by motor for Dunwich, arriving at the village about one in the afternoon. The day was pleasant, but even in the brightest sunlight a kind of quiet dread and portent seemed to hover about the strangely domed hills and the deep, shadowy ravines of the stricken region.

Content



Friday morning Armitage, Rice, and Morgan set out by motor for Dunwich, arriving at the village about one in the afternoon. The day was pleasant, but even in the brightest sunlight a kind of quiet dread and portent seemed to hover about the strangely domed hills and the deep, shadowy ravines of the stricken region.

By default, text fills the content area

Content is used to measure box height & width by default

Not really what most people expect!

Margin

Border

Padding

Content

Friday morning Armitage, Rice, and Morgan set out by motor for Dunwich, arriving at the village about one in the afternoon. The day was pleasant, but even in the brightest sunlight a kind of quiet dread and portent seemed to hover about the strangely domed hills and the deep, shadowy ravines of the stricken region.

padding-top
padding-right
padding-bottom
padding-left

padding

Sets amount of *space on the inside between content & border*

Values

- » `<length>`; e.g., `1em` or `30px` or `2vh`
- » `<percentage>` of the `width` of the block; e.g., `5%`

Padding is invisible, so you cannot change its appearance

Can set padding...

- » on each side individually (e.g., `padding-top: 1em`)
- » or group sides with shorthand (e.g., `padding: 1em`)

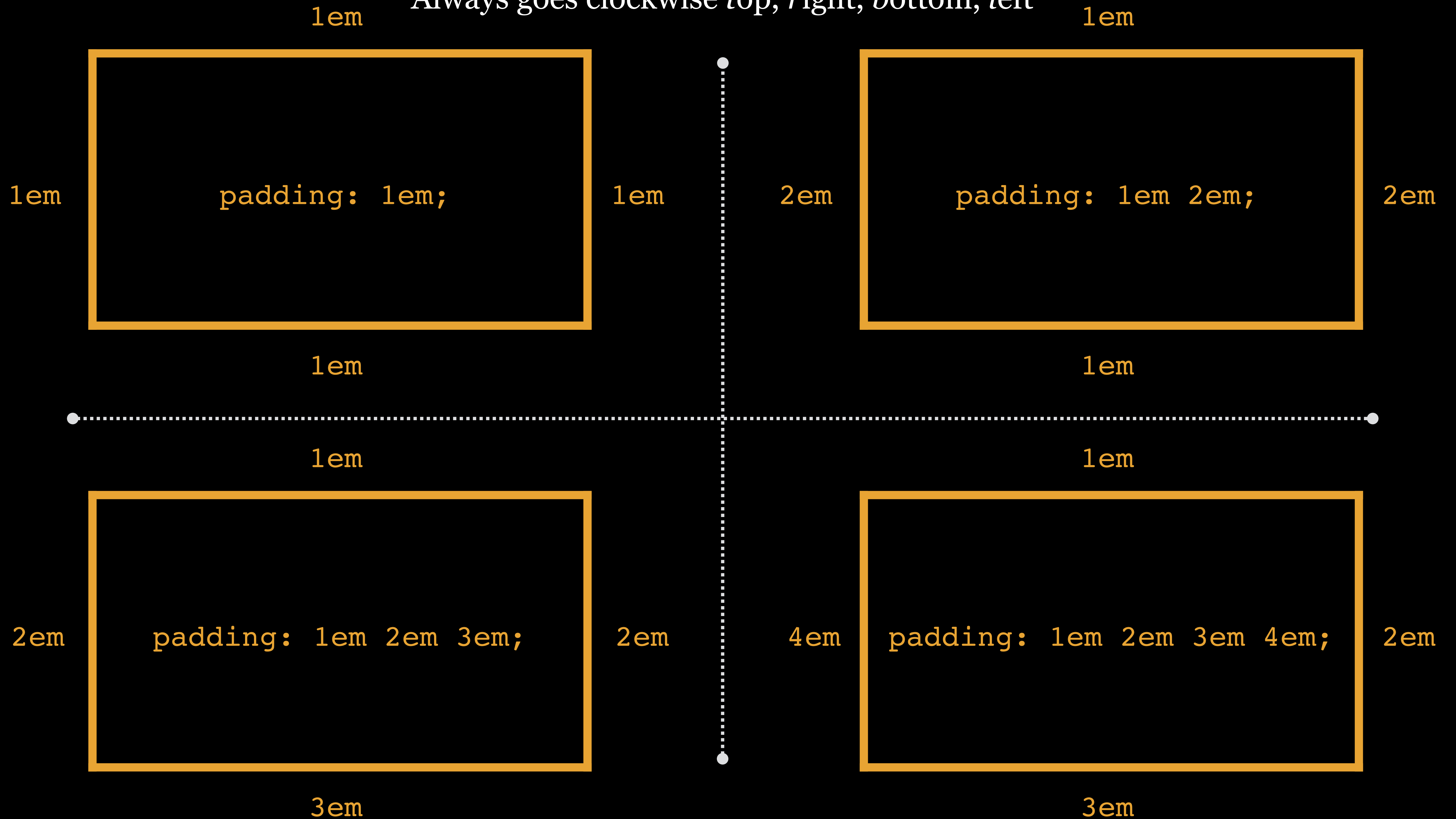
Set padding on each side individually

```
padding-top: n;  
padding-right: n;  
padding-bottom: n;  
padding-left: n;
```

Repeating values (e.g., `1em` on all sides, or `1em` on top & bottom & `2em` on right & left) becomes tedious

Use `padding` shorthand to group values

Always goes clockwise *top, right, bottom, left*



Margin

Border

Padding

Content

Friday morning Armitage, Rice, and Morgan set out by motor for Dunwich, arriving at the village about one in the afternoon. The day was pleasant, but even in the brightest sunlight a kind of quiet dread and portent seemed to hover about the strangely domed hills and the deep, shadowy ravines of the stricken region.

3 properties for borders

- » **width**: uses **<length>**, e.g., **10px**, or keywords (**thin**, **medium**, or **thick**)
- » **style**: appearance of border, from a list of values; e.g., **none**, **solid**, or **dotted**
- » **color**: uses **<color>**

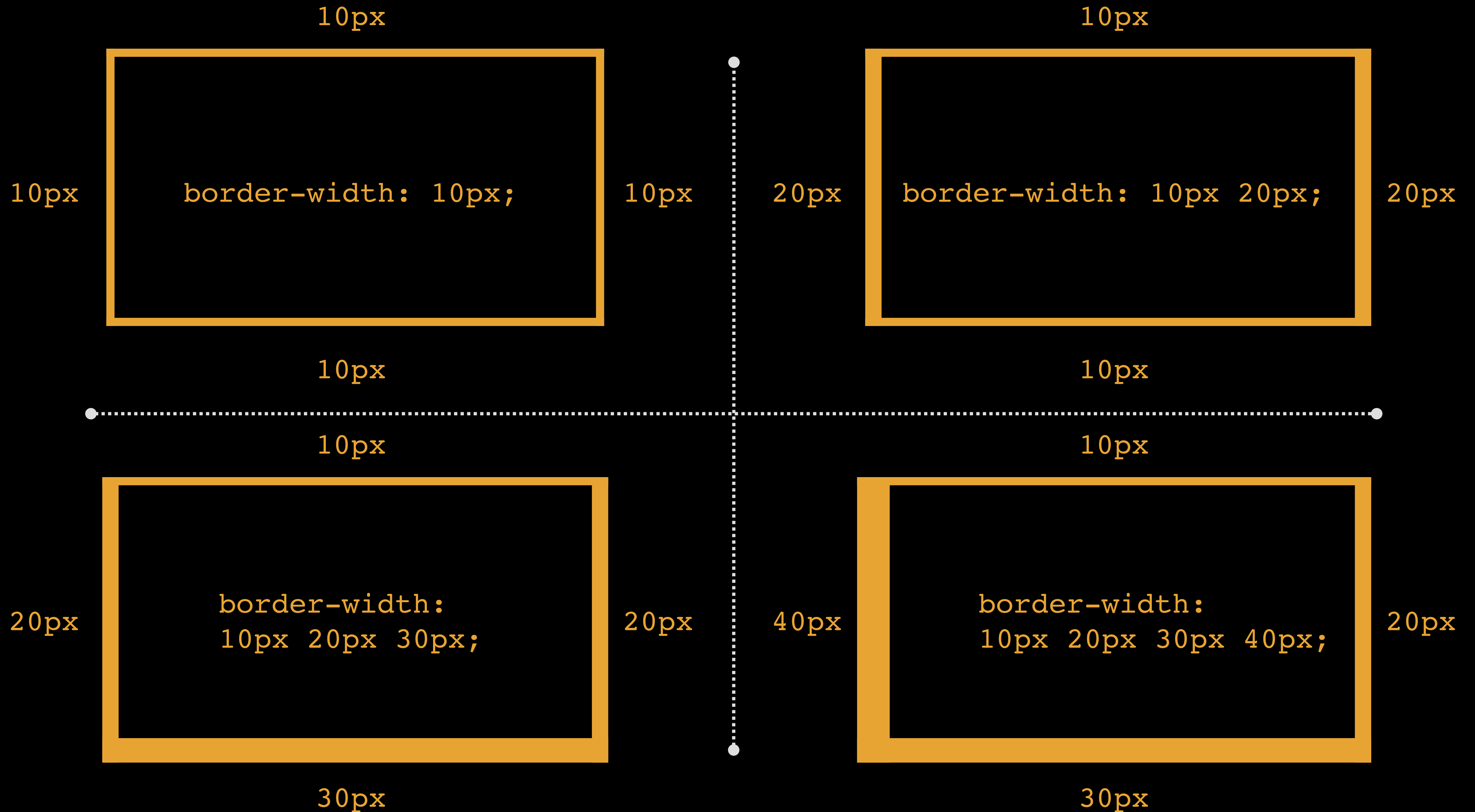
Sizes for the 3 `border-width` keyword values (`thin`, `medium`, `thick`) are not set in the spec, so they're set by browsers

The default `border-width` is `medium`

Set border width on each side individually

```
border-top-width: <border-width>;  
border-right-width: <border-width>;  
border-bottom-width: <border-width>;  
border-left-width: <border-width>;
```

Use `border-width` shorthand to group values



Set border style on each side individually

```
border-top-style: <border-style>;  
border-right-style: <border-style>;  
border-bottom-style: <border-style>;  
border-left-style: <border-style>;
```

Use `border-style` shorthand to group values

Border styles

- » **none**: no border shows, so computed **border-width** is 0*
- » **hidden**: similar as **none***
- » **dotted**: • • • • •
- » **dashed**: – – – – –
- » **solid**: _____
- » **double**: =

* See *Border Conflict Resolution* later


Border styles

- » **groove**: 3D effect going in
- » **ridge**: 3D effect going out
- » **inset**: makes box appear embedded
- » **outset**: 3D effect that makes box appear embossed

These don't look so good, so be wary of them



```
border-style: solid;
```



```
border-style:  
solid dashed;
```



```
border-style:  
solid dashed dotted;
```



```
border-style:  
solid dashed dotted none;
```

Set border color on each side individually

```
border-top-color: <color>;  
border-right-color: <color>;  
border-bottom-color: <color>;  
border-left-color: <color>;
```

Use `border-color` shorthand to group values



```
border-color: orange;
```

```
border-color: orange aqua;
```

```
border-color:  
orange aqua chartreuse;
```

```
border-color:  
orange aqua chartreuse  
white;
```

Or combine it all together...

```
border-top: <br-width> <br-style> <color>;  
border-right: <br-width> <br-style> <color>;  
border-bottom: <br-width> <br-style> <color>;  
border-left: <br-width> <br-style> <color>;
```

Or set it for all 4 sides at once:

```
border: <br-width> <br-style> <color>;
```

What I use

The order of the values doesn't matter:

```
border: <br-width> <br-style> <color>;
```

```
border: <br-style> <color> <br-width>;
```

```
border: <color> <br-style> <br-width>;
```





FORMATTING GUIDE

Don't do this (yes, students have coded this way):

```
h3 > a {  
  border-bottom: dotted;  
  border-bottom-width: 1px;  
  border-bottom-color: red;  
}
```

Do this:

```
h3 > a {  
  border-bottom: 1px dotted red;  
}
```

`border-radius`

Rounds the corners of an element's border

See *CSS Effects*



Margin

Border

Padding

Friday morning Armitage, Rice, and Morgan set out by motor for Dunwich, arriving at the village about one in the afternoon. The day was pleasant, but even in the brightest sunlight a kind of quiet dread and portent seemed to hover about the strangely domed hills and the deep, shadowy ravines of the stricken region.

Content



margin-top
margin-right
margin-bottom
margin-left

margin

Sets amount of *space on the outside of the border*

Values

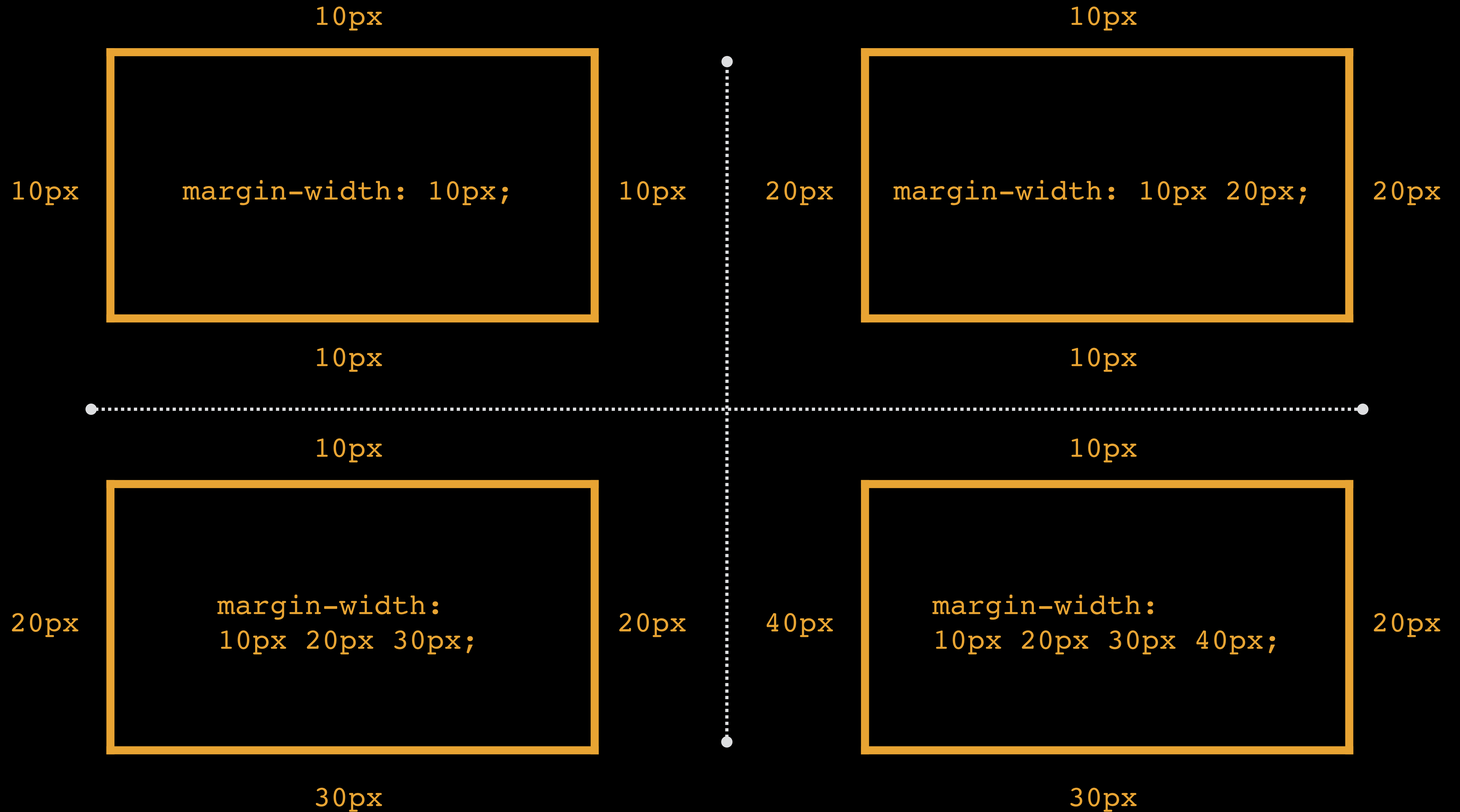
- » `<length>`; can be positive, negative, or zero, e.g., `1em` or `-20px` or `0`
- » `<percentage>` of the `width` of the block; e.g., `5%`
- » `auto`

Margin is invisible, so you cannot change its appearance

Set margin on each side individually

```
margin-top: n;  
margin-right: n;  
margin-bottom: n;  
margin-left: n;
```

Use `margin` shorthand to group values




```
1 <aside>
2   <h2>Nyarlathotep</h2>
3   <p>And where Nyarlathotep went, rest vanished, for
   the small hours were rent with the screams of
   nightmare.</p>
4   <ul>
5     <li>terrible phantasms</li>
6     <li>monstrous guilt</li>
7     <li>hellish moon-glitter</li>
8     <li>mindless gargoyles</li>
9   </ul>
10 </aside>
```

```
1 /* The aside has padding applied to all sides */
2
3 aside {
4   padding: 1rem;
5 }
6
7
8
9 /* Beautification (not part of the lesson) */
10
11 html {
12   font-size: 24px;
```

Nyarlathotep

And where Nyarlathotep went, rest vanished, for the small hours were rent with the screams of nightmare.

- terrible phantasms
- monstrous guilt
- hellish moon-glitter
- mindless gargoyles

The padding on the `<aside>` affects everything, including the `<h2>`

```
1 <aside>
2   <h2>Nyarlathotep</h2>
3   <p>And where Nyarlathotep went, rest vanished, for
   the small hours were rent with the screams of
   nightmare.</p>
4   <ul>
5     <li>terrible phantasms</li>
6     <li>monstrous guilt</li>
7     <li>hellish moon-glitter</li>
8     <li>mindless gargoyles</li>
9   </ul>
10 </aside>
```

```
1 /* The aside has padding applied to all sides */
2
3 aside {
4   padding: 1rem;
5 }
6
7 /* The first h2 in the aside has negative margins
   applied to offset the padding of its parent. */
8
9 aside > h2:first-child {
10   margin: -1rem -1rem 0;
11 }
```

Nyarlathotep

And where Nyarlathotep went, rest vanished, for the small hours were rent with the screams of nightmare.

- terrible phantasms
- monstrous guilt
- hellish moon-glitter
- mindless gargoyles

The fix: setting margin on the `<h2>` to a negative `<length>` equal to the padding of its container

`margin: auto`

Tells the browser to select a suitable margin to use

Commonly used to center boxes horizontally by equally distributing available space on the right & left


```
HTML
1 <div class="center">
2   <h1>The Lurking
  Fear<small>H.P.
  Lovecraft</small></h1>
3   <p>
4     There was thunder in
the air on the night I went
to the deserted mansion
atop Tempest Mountain to
find the lurking fear. I
was not alone, for
foolhardiness was not then
mixed with that love of the

CSS
1 h1 {
2   text-align: center;
3 }
4
5 .center {
6   /* next 3 are required */
7   width: 600px;
8   margin-left: auto;
9   margin-right: auto;
10  border: 1px dotted gray;
11  padding: 0 1em;
12 }

JS
```

The Lurking Fear

H.P. Lovecraft

There was thunder in the air on the night I went to the deserted mansion atop Tempest Mountain to find the lurking fear. I was not alone, for foolhardiness was not then mixed with that love of the grotesque and the terrible which has made my career a series of quests for strange horrors in literature and in life. With me were two faithful and muscular men for whom I had sent when the time came; men long associated with me in my ghastly explorations because of their peculiar fitness.

We had started quietly from the village because of the reporters who still lingered about after the eldritch panic of a month before—the nightmare creeping death. Later, I thought, they might aid me; but I did not want

box-sizing

How *dimensions (width & height)* are calculated

`box-sizing: content-box`

Width & height measured based on content, *not* border, margin, or padding

Default!

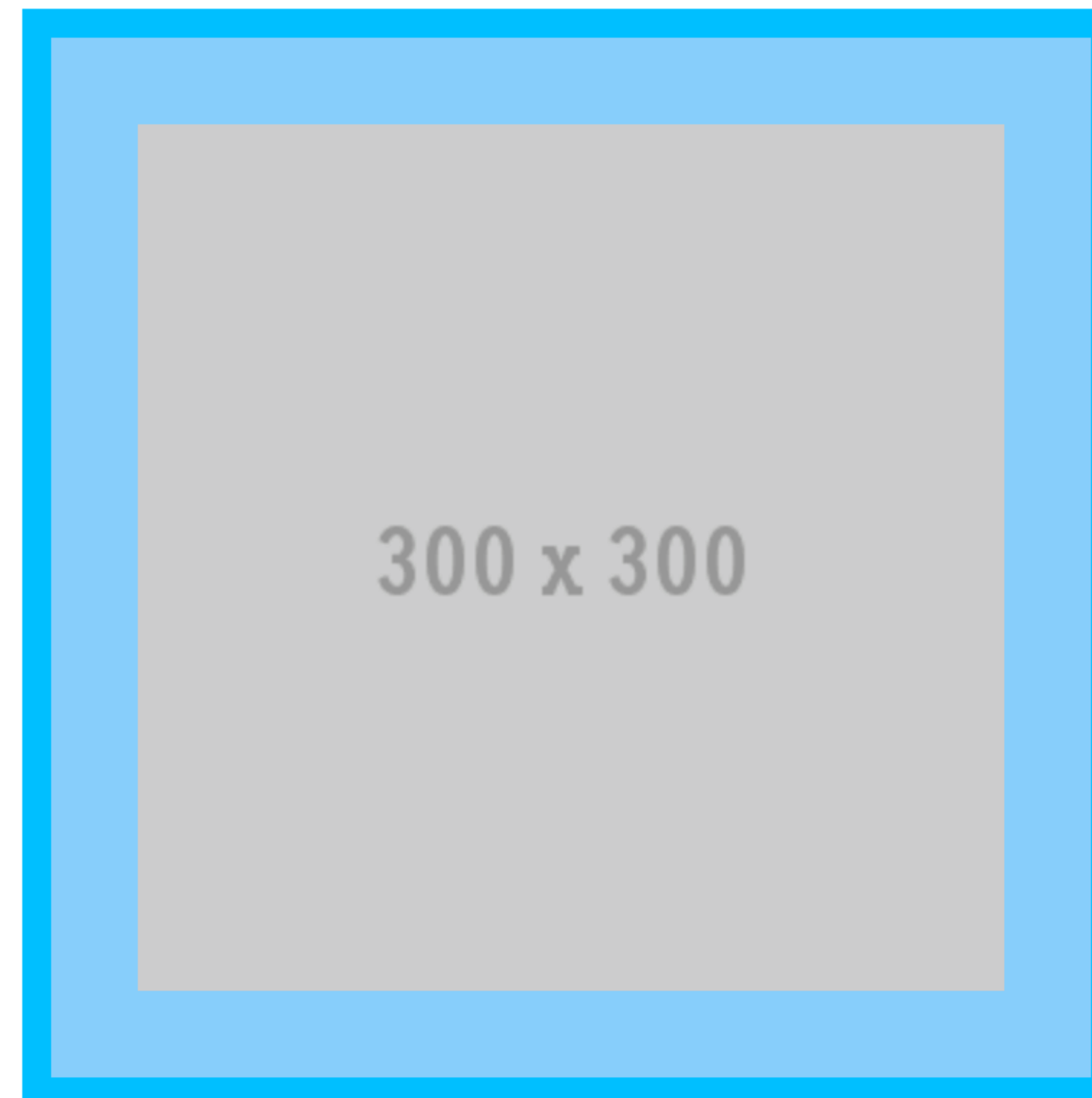
HTML

```
1 <div>
2   
3 </div>
```

CSS

```
1 div {
2   box-sizing: content-box; /* default
3   */
4 }
5 div {
6   margin: 30px;
7   border: 10px solid deepskyblue;
8   padding: 30px;
9   height: 300px;
10  width: 300px;
11 }
```

JS



box-sizing: content-box

means the box is 300×300, the size of the gray image that is its content

```
box-sizing: border-box
```

Width & height include content, padding, & border, but
not margin

This is far better & should've been the default

⚙ HTML



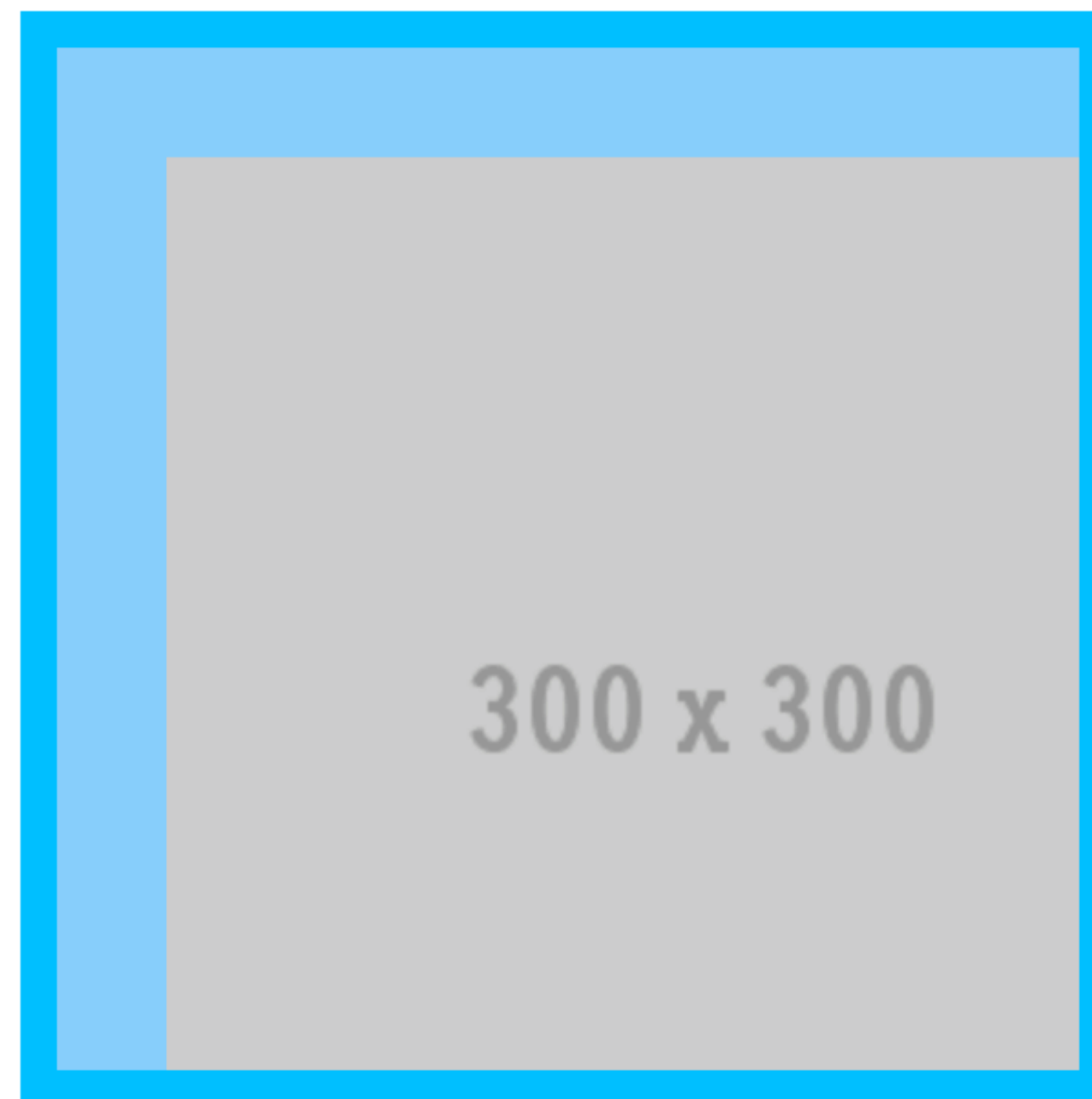
```
1 <div>
2   
3 </div>
```

⚙ CSS



```
1 div {
2   box-sizing: border-box;
3 }
4
5 div {
6   margin: 30px;
7   border: 10px solid deepskyblue;
8   padding: 30px;
9   height: 300px;
10  width: 300px;
11 }
12
```

⚙ JS



box-sizing: border-box means
the box is now 300×300 from
border to border, so the 300×300
gray image no longer fits

box-sizing



8



29



5.1

iOS

5



10



4

Width & Height

`width`

Width of the box (determined by `box-sizing`)

`min-width`

Minimum width of box so that it cannot be narrower

`max-width`

Maximum width of box so that it cannot be wider

Values for `width`, `min-width`, & `max-width`:

- » `auto`: browser calculates & selects width (default)
- » `<length>`
- » `<percentage>` of container
- » `max-content`: as wide as the content, even if it's too wide to fit in its container
- » `min-content`: as narrow as the widest content item
- » `fit-content`: as wide as the content or as wide as the container, whichever is narrower

⚙ HTML ▾

1 ▾

<p>

2

Hieroglyphics had covered the walls and pillars, and from some undetermined point below had come a voice that was not a voice; a chaotic sensation which only fancy could transmute into sound, but which he attempted to render by the almost unpronounceable jumble of letters:

3

</p>

4 ▾

Cthulhu fhtagn!

Hieroglyphics had covered the walls and pillars, and from some undetermined point below had come a voice that was not a voice; a chaotic sensation which only fancy could transmute into sound, but which he attempted to render by the almost unpronounceable jumble of letters:

Cthulhu fhtagn!

⚙ CSS (SCSS) ▾

5 ▾

p {

6

// width: max-content;

7

}

⚙ JS ▾

⚙ HTML ▾

1 ▾

<p>

2

Hieroglyphics had covered the walls and pillars, and from some undetermined point below had come a voice that was not a voice; a chaotic sensation which only fancy could transmute into sound, but which he attempted to render by the almost unpronounceable jumble of letters:

3

</p>

4 ▾

Cthulhu fhtagn!

⚙ CSS (SCSS) ▾

5 ▾

p {

6

width: max-content;

7

}

⚙ JS ▾

Hieroglyphics had covered the walls and pillars, and from some undetermined

Cthulhu fhtagn!

HTML

1

<figure>

2

3

<figcaption>

4

The deeper—and the farther north and east—we dug, the more blocks we found.

5

</figcaption>

6

</figure>

7

<p>

8

There probably never was a time when groups or cults did not secretly cherish certain of these hints. In the Necronomicon the presence of such a cult among human beings was suggested—a cult that sometimes gave aid to minds voyaging down the aeons from

CSS (SCSS)

1

figure {

2

width: min-content;

3

}

JS



The deeper—and the farther north and east—we dug, the more blocks we found.

There probably never was a time when groups or cults did not secretly cherish certain of these hints. In the Necronomicon the presence of such a cult among human beings was suggested—a cult that sometimes gave aid to minds voyaging down the aeons from the days of the Great Race.

And, meanwhile, the Great Race itself waxed well-nigh omniscient, and turned to the task of setting up exchanges with the minds of other planets, and of exploring their pasts

and futures. It sought likewise to fathom the past years and origin of that black, aeon-dead orb in far space whence its own mental heritage had come—for the mind of the Great Race was older than its bodily form.

HTML

1

<figure>

2

3

<figcaption>

4

The deeper—and the farther north and east—we dug, the more blocks we found.

5

</figcaption>

6

</figure>

7

<p>

8

There probably never was a time when groups or cults did not secretly cherish certain of these hints. In the Necronomicon the presence of such a cult among human beings was suggested—a cult that sometimes gave aid to minds voyaging down the aeons from

CSS (SCSS)

1

figure {

2

// width: min-content;

3

}

JS



The deeper—and the farther north and east—we dug, the more blocks we found.

There probably never was a time when groups or cults did not secretly cherish certain of these hints. In the Necronomicon the presence of such a cult among human beings was suggested—a cult that sometimes gave aid to minds voyaging down the aeons from the days of the Great Race.

And, meanwhile, the Great Race itself waxed well-nigh omniscient, and

⚙ HTML ▾

1 ▾

<p>

2

Hieroglyphics had covered the walls and pillars, and from some undetermined point below had come a voice that was not a voice; a chaotic sensation which only fancy could transmute into sound, but which he attempted to render by the almost unpronounceable jumble of letters:

3

</p>

4 ▾

Cthulhu fhtagn!

Hieroglyphics had covered the walls and pillars, and from some undetermined point below had come a voice that was not a voice; a chaotic sensation which only fancy could transmute into sound, but which he attempted to render by the almost unpronounceable jumble of letters:

Cthulhu fhtagn!

⚙ CSS (SCSS) ▾

1 ▾

a {

2

width: fit-content;

3

}

⚙ JS ▾

⚙ HTML ▾

1 ▾

<p>

2

Hieroglyphics had covered the walls and pillars, and from some undetermined point below had come a voice that was not a voice; a chaotic sensation which only fancy could transmute into sound, but which he attempted to render by the almost unpronounceable jumble of letters:

3

</p>

4 ▾

Cthulhu fhtagn!

Hieroglyphics had covered the walls and pillars, and from some undetermined point below had come a voice that was not a voice; a chaotic sensation which only fancy could transmute into sound, but which he attempted to render by the almost unpronounceable jumble of letters:

Cthulhu fhtagn!

⚙ CSS (SCSS) ▾

1 ▾

a {

2

// width: fit-content;

3

}

⚙ JS ▾

`height`

Height of the box (determined by `box-sizing`)

`min-height`






Minimum height of box so that it cannot be shorter


`max-height`

Maximum height of box so that it cannot be taller

Values for `height`, `min-height` & `max-height`:

- » `auto`: browser calculates & selects height (default)
- » `<length>`
- » `<percentage>`

				ios		
width	4	1	1	1	1	1
min-width	7	1	2.0.2	3.2	1	2.1
max-width	7	1	2.0.2	3.2	1	2.1
height	4	1	1	1	1	1
min-height	7	3	1	3.2	1	2.1
max-height	7	1	1	3.2	1	2.1

							
width:							
max-content	—	79	66	11	11	46	46
min-content	—	79	66	11	11	46	46
fit-content	—	79	3*	11	11	46	46

* Requires `-moz-` vendor prefix

height:

max-content

min-content

fit-content



ios



—

79

66

11

11

46

46

—

79

66

11

11

46

46

—

79

—

11

11

46

46

overflow

overflow

overflow-x

overflow-y

overflow

On a block-level element, *what to do if content overflows its box*

Values:

- » **visible**: Display overflow content (default)
- » **hidden**: Clip content
- » **scroll**: Render horizontal & vertical scroll bars all the time (don't use!)
- » **auto**: Show scroll bars only as needed if content overflows

If you're building apps instead of webpages, `overflow: scroll & overflow: auto` can be very useful

HTML

1

<div>

2

3

</div>

CSS

or overflow-y */

2

3

div {

4

/* overflow: auto; */

5

/* overflow: scroll; */

6

/* overflow: hidden; */

7

overflow: visible;

8

}

9

10

/* Uninteresting stuff below here

*/

11

JS



overflow: visible
displays overflow
content (default)

HTML

```
1 <div>
2   
3 </div>
```

CSS

```
  or overflow-y */
2
3 div {
4 /*  overflow: auto; */
5 /*  overflow: scroll; */
6   overflow: hidden;
7 /*  overflow: visible; */
8 }
9
10 /* Uninteresting stuff below here
   */
11
```

JS



overflow: hidden clips
overflow content


```
HTML
1 <div>
2   
4 </div>

CSS
1 or overflow-y */
2
3 div {
4   /* overflow: auto; */
5   overflow: scroll;
6   /* overflow: hidden; */
7   /* overflow: visible; */
8 }
9
10 /* Uninteresting stuff below here
11    */
12
13 JS
```



overflow: scroll always displays scrollbars, even if unnecessary


```
HTML
1 <div>
2   
5 </div>

CSS
1 or overflow-y */
2
3 div {
4   overflow: auto;
5   /* overflow: scroll; */
6   /* overflow: hidden; */
7   /* overflow: visible; */
8 }
9
10 /* Uninteresting stuff below here
11    */
12
JS
```



overflow: auto displays scrollbars
only if needed

`overflow-x`

Same as `overflow`, but only for left & right

`overflow-y`

Same as `overflow`, but only for top & bottom

HTML

```
1 <div></div>
```

CSS

```
9  
10 /* Uncomment to try setting vertical  
   and horizontal overflow separately */  
11  
12 div {  
13   overflow-x: auto;  
14   overflow-y: hidden;  
15 }  
16  
17  
18  
19 /* To see overflow:auto behavior,
```

JS





ios



overflow

4

1

1

1

1

1

overflow-x

5

3.5

3

1

1

1

overflow-y

5

3.5

3

1

1

1

display
& Box Generation

`<display-box>` keyword values are specific to box generation

» `none`

» `contents`

`display: none`

Removes element from box tree so no box is generated, as though it does not exist

Also removes all descendants (i.e., its *sub-tree*)

HTML



from the gulfs of hell. Now and then the less organized ululation would cease, and from what seemed a well-drilled chorus of hoarse voices would rise in sing-song chant that hideous phrase or ritual:

```
2 <div>
```

```
3   "Ph'nglui mglw'nafh Cthulhu R'lyeh  
   wgah'nagl fhtagn."
```

```
4 </div>
```

```
5 Then the men, having reached a spot  
   where the trees were thinner, came  
   suddenly in sight of the spectacle  
   itself. Four of them reeled, one  
   fainted, and two were shaken into a
```

CSS



```
1  /* Turns off the display of an element  
   (it has no effect on layout); all  
   descendant elements also have their  
   display turned off. The document is  
   rendered as though the element did not  
   exist. */
```

```
2  
3  div {  
4    display: none;  
5  }
```

```
6  
7  /* ↓ Not part of the lesson ↓ */
```

JS



Only poetry or madness could do justice to the noises heard by Legrasse's men as they ploughed on through the black morass toward the red glare and muffled tom-toms. There are vocal qualities peculiar to men, and vocal qualities peculiar to beasts; and it is terrible to hear the one when the source should yield the other. Animal fury and license here whipped themselves to daemoniac heights by howls and squawking ecstasies that tore and reverberated through those nighted woods like pestilential tempests from the gulfs of hell. Now and then the less organized ululation would cease, and from what seemed a well-drilled chorus of hoarse voices would rise in sing-song chant that hideous phrase or ritual: Then the men, having reached a spot where the trees were thinner, came suddenly in sight of the spectacle itself. Four of them reeled, one fainted, and two were shaken into a frantic cry which the mad cacophony fortunately deadened. Legrasse dashed swamp water on the face of the fainting man, and all stood trembling and nearly hypnotised with horror.



ABOUT

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- Stingrays at Caribbean Cove
- Jammin' at the Zoo presented by Macy's - August 27
- Grevy's zebra foal and other summer babies

`display: contents`

Removes box from box tree & is replaced by its contents

HTML

1

<ul class="card-list">

2

3

<a class="card"

href="#">

10

11

12

<a class="card"

href="#">

19

20

21

<a class="card"

href="#">

28

29

CSS (SCSS)

1

.card-list {

2

display: flex;

3

justify-content: space-around;

4

}

5

6

li {

7

display: contents;

8

}

JS



Azathoth

Presently the benign Elder Ones would be deposed by infinity's Other Gods, who would drag the world down a black spiral vortex to the central void where the demon sultan Azathoth gnaws hungrily in the dark....



Cthulhu

Ph'nglui mglw'nafh Cthulhu R'lyeh wgah'nagl fhtagn. In his house at R'lyeh dead Cthulhu waits dreaming." "We live on a placid island of ignorance in the midst of black seas of infinity, and it was not meant that we should voyage far.



Yog Sothoth

Imagination called up the shocking form of fabulous Yog-Sothoth—only a congeries of iridescent globes, yet stupendous in its malign suggestiveness.

HTML

1

<ul class="card-list">

2

3

<a class="card"

href="#">

10

11

12

<a class="card"

href="#">

19

20

21

<a class="card"

href="#">

28

29

CSS (SCSS)

1

.card-list {

2

display: flex;

3

justify-content: space-around;

4

}

5

6

li {

7

// display: contents;

8

}

JS



Azathoth

Presently
the
benign
Elder
Ones
would
be
deposed
by
infinity's
Other
Gods,
who
would
drag the
world
down a
black
spiral
vortex to
the
central
void
where
the



Cthulhu

Ph'nglui
mglw'nafh
Cthulhu
R'lyeh
wgah'nagl
fhtagn. In
his house
at R'lyeh
dead
Cthulhu
waits
dreaming.”
“We live
on a
placid
island of
ignorance
in the
midst of
black seas
of
infinity,
and it
was not



Yog Sothoth

Imagination
called
up
the
shocking
form
of
fabulous
Yog-
Sothoth—
only
a
congeries
of
iridescent
globes,
yet
stupendous
in
its
malign
suggestiveness.



display:					ios		
none	4	12	1	1	Y	1	Y
contents	–	79 	37  62	11.1  13.1	11.3  13.5	65 	67 

 means that the element is hidden from assistive technologies

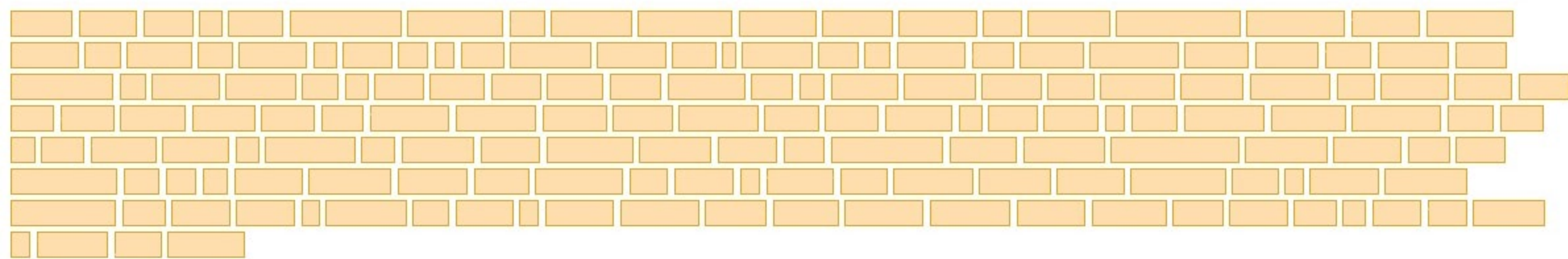
The Flow

The *flow* is the interaction of 3 layout behaviors:

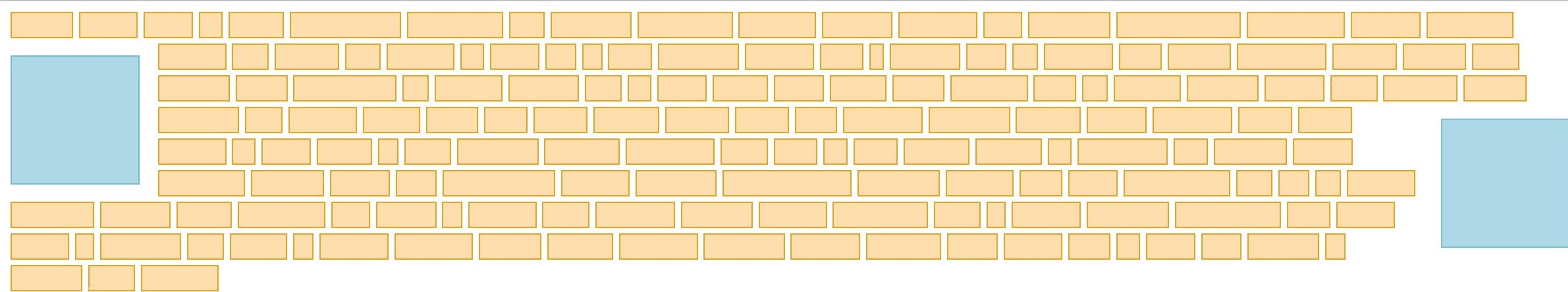
- » Block layout is *vertically adjacent*
- » Inline layout is *horizontally wrapping*
- » Floated boxes are *moved to one side* & content that follows them flows around them



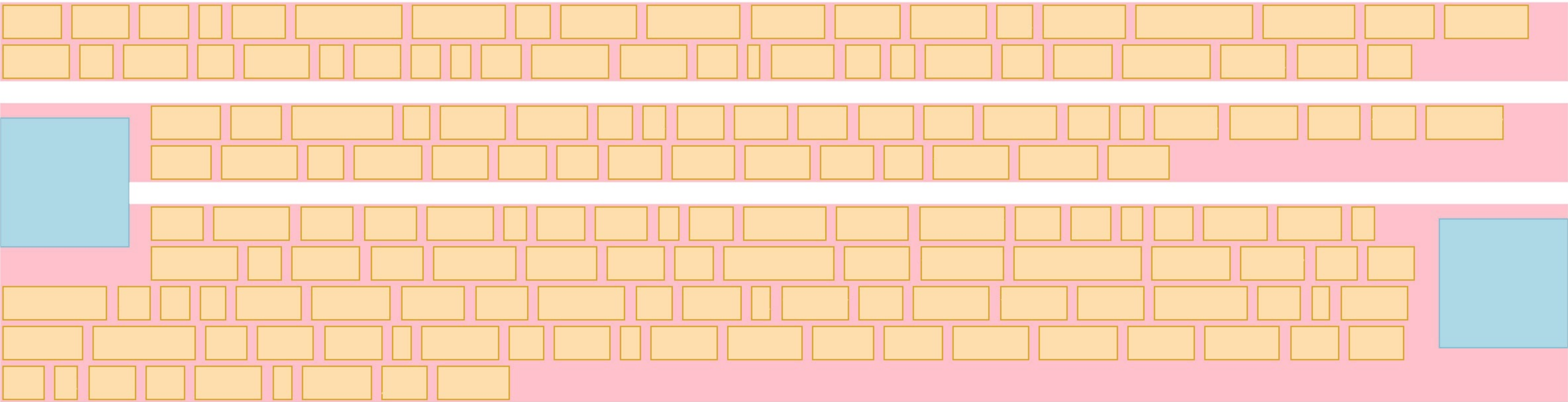
Block layout means that boxes are vertically adjacent



Inline layout means that horizontal boxes wrap to new lines
when they cannot fit



Floated boxes are moved to one side & content that follows them flows around them

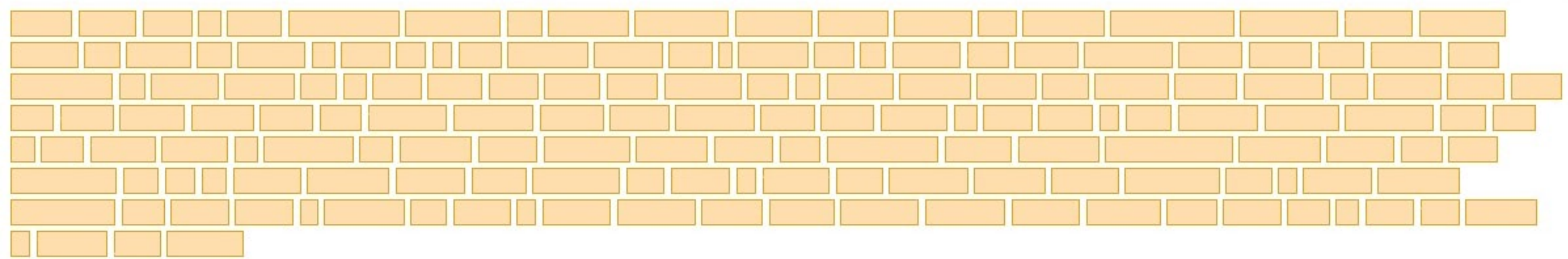


Blocks, inlines, & floats all participate together in a flow

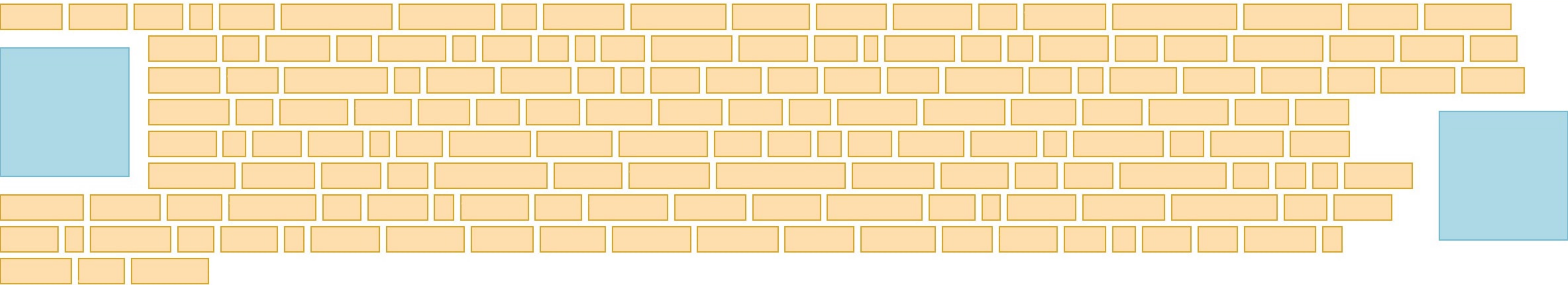
Inline Layout

Inline layout is basic horizontally wrapping behavior:
content runs out of space at end of a line & wraps to the
line below it

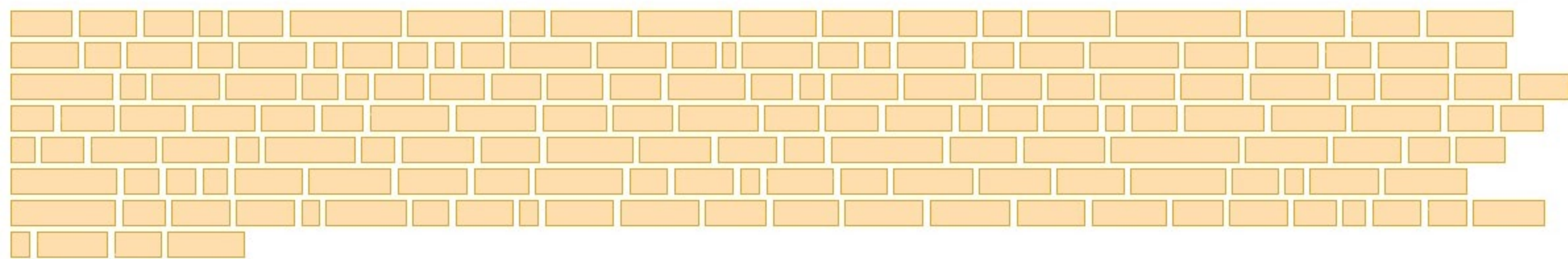
Content might be text, but it could also be images,
buttons, or icons



In addition to horizontally wrapping, inline layout causes content to flow around floated boxes (more on `float` soon!)



Inline-Level Boxes



All boxes in inline layout are *inline-level boxes*

Inline-level boxes are either...

- » *inline boxes* that break across lines
- » *atomic inline boxes* that do *not* break across lines & instead move to the next line

Inline box

Contents break across lines; e.g., ``, `<i>`, `<a>`, ``

Vertical portions of box model (`padding`, `border`, & `margin`) are ignored by the flow


```
HTML
3 <p>
4   West of Arkham the hills rise
   wild, <span>and there are valleys
   with deep woods that no axe has
   ever cut</span>. There are dark
   narrow glens where the trees
   slope fantastically, and where
   thin <span>brooklets trickle
   without ever having caught the
   glint of sunlight</span>.
5 </p>
6
7 <p>
8   On the gentler slopes there are
   farms, ancient and rocky,
   <span>with squat, moss-coated
   cottages brooding
   eternally</span> over old New
   England secrets in the lee of
   great ledges; but these are all
9 </p>

CSS
1 span {
2   border: 4px solid orange
3 }

JS
```

The Colour out of Space

H.P. Lovecraft

West of Arkham the hills rise wild, and there are valleys with deep woods that no axe has ever cut. There are dark narrow glens where the trees slope fantastically, and where thin brooklets trickle without ever having caught the glint of sunlight.

On the gentler slopes there are farms, ancient and rocky, with squat, moss-coated cottages brooding eternally over old New England secrets in the lee of great ledges; but these are all vacant now...

The old folk have gone away, and foreigners do not like to live there.

Inline boxes break across lines,
but are still 1 box

HTML

Tidy

✕

```
1 organized ululation would cease, and from what
2 seemed a well-drilled chorus of hoarse voices
3 would rise in sing-song chant that hideous
4 phrase or ritual:
5
6 <div>
7     "Ph'nglui mglw'nafh Cthulhu R'lyeh wgah'nagl
8     fhtagn."
9
10 </div>
11
12 Then the men, having reached a spot where the
13 trees were thinner, came suddenly in sight of
14 the spectacle itself. Four of them reeled, one
15 fainted, and two were shaken into a frantic cry
16 which the mad cacophony fortunately deadened.
```

CSS

Tidy

View Compiled

✕

```
1 /* The element generates one or more inline
2    element boxes. All parts of the box model are
3    drawn, but only the left and right margin,
4    border, and padding occupy space in the flow.
5    */
6
7
8 <div {
9     display: inline;
10 }
11
12
13 /* ↓ Not part of the lesson ↓ */
14
15
16
```

Only poetry or madness could do justice to the noises heard by Legrasse's men as they ploughed on through the black morass toward the red glare and muffled tom-toms. There are vocal qualities peculiar to men, and vocal qualities peculiar to beasts; and it is terrible to hear the one when the source should yield the other. Animal fury and license here whipped themselves to daemoniac heights by howls and squawking ecstasies that tore and reverberated through those nighted woods like pestilential tempests from the gulfs of hell. Now and then the less organized ululation would cease, and from what seemed a well-drilled chorus of hoarse voices would rise in sing-song chant that hideous phrase or ritual:

“Ph'nglui mglw'nafh Cthulhu R'lyeh wgah'nagl fhtagn.”

Then the men, having reached a spot where the trees were thinner, came suddenly in sight of the spectacle itself. Four of them reeled, one fainted, and two were shaken into a frantic cry which the mad cacophony fortunately deadened. Legrasse dashed swamp water on the face of the fainting man, and all stood trembling and nearly hypnotised with horror.

Atomic inline box

Contents does not break across lines; e.g., ``,
`<video>`, & `<input>`

Vertical portions of box model (`padding`, `border`, & `margin`) are *not* ignored by the flow

HTML

from the gulfs of hell. Now and then the less organized ululation would cease, and from what seemed a well-drilled chorus of hoarse voices would rise in sing-song chant that hideous phrase or ritual:

```
2 <div>
3   "Ph'nglui mglw'nafh Cthulhu R'lyeh
   wgah'nagl fhtagn."
```

```
4 </div>
```

```
5 Then the men, having reached a spot
   where the trees were thinner, came
   suddenly in sight of the spectacle
   itself. Four of them reeled, one
   fainted, and two were shaken into a
```

CSS

```
1 /* The element generates a block
   element box that is flowed with
   surrounding content as if it were a
   single inline box (behaving like a
   replaced element such as an image). */
```

```
2
3 div {
4   display: inline-block;
5 }
```

```
6
7 /* ↓ Not part of the lesson ↓ */
8
```

JS

Only poetry or madness could do justice to the noises heard by Legrasse's men as they ploughed on through the black morass toward the red glare and muffled tom-toms. There are vocal qualities peculiar to men, and vocal qualities peculiar to beasts; and it is terrible to hear the one when the source should yield the other. Animal fury and license here whipped themselves to daemoniac heights by howls and squawking ecstasies that tore and reverberated through those nighted woods like pestilential tempests from the gulfs of hell. Now and then the less organized ululation would cease, and from what seemed a well-drilled chorus of hoarse voices would rise in sing-song chant that hideous

phrase or ritual:

"Ph'nglui mglw'nafh Cthulhu R'lyeh wgah'nagl fhtagn."

Then the men, having reached a spot where the trees were thinner, came suddenly in sight of the spectacle itself. Four of them reeled, one fainted, and two were shaken into a frantic cry which the mad cacophony fortunately deadened. Legrasse dashed swamp water on the face of the fainting man, and all stood trembling and nearly hypnotised with horror.

Note that these words are also atomic inline blocks — you never see a word break in the middle of itself

HTML

1

<ul class="utility-nav">

2

Search

3

Site Map

4

Shopping Cart

5

Your Account

6

[Search](#)[Site Map](#)[Shopping Cart](#)[Your Account](#)

CSS (SCSS)

1

li {

2

display: inline-block; // compare to display: inline

3

margin: .5em;

4

border: 1px solid gainsboro;

5

padding: .5em 1em;

6

background-color: whitesmoke;

7

}

JS

HTML

1

<ul class="utility-nav">

2

Search

3

Site Map

4

Shopping Cart

5

Your Account

6

CSS (SCSS)

1

li {

2

display: inline;

3

margin: .5em;

4

border: 1px solid gainsboro;

5

padding: .5em 1em;

6

background-color: whitesmoke;

7

}

JS

And remember — the rendering engine also creates *anonymous atomic inline* boxes around every word in the viewport

Block Layout



Block layout means that boxes are vertically adjacent



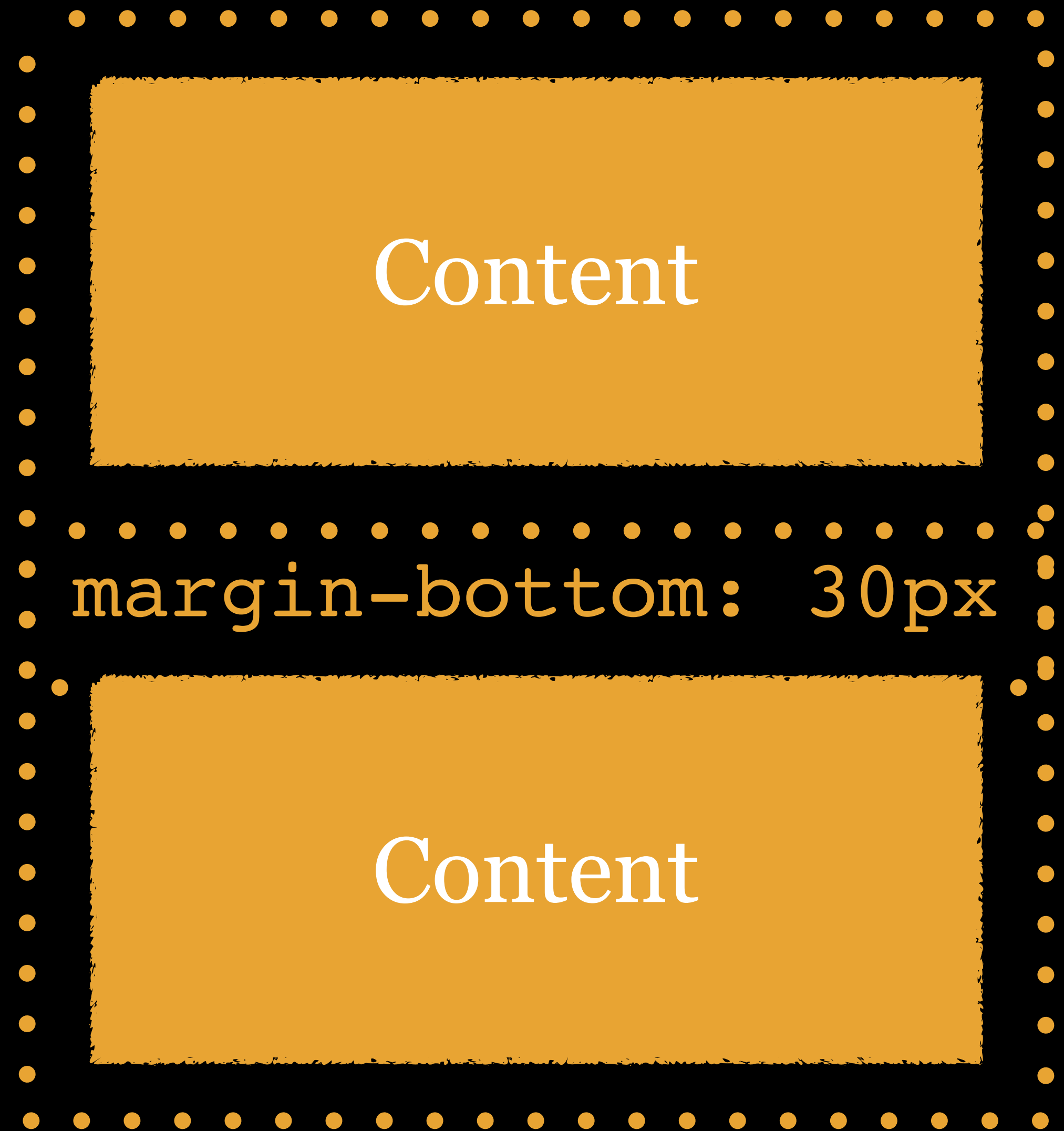
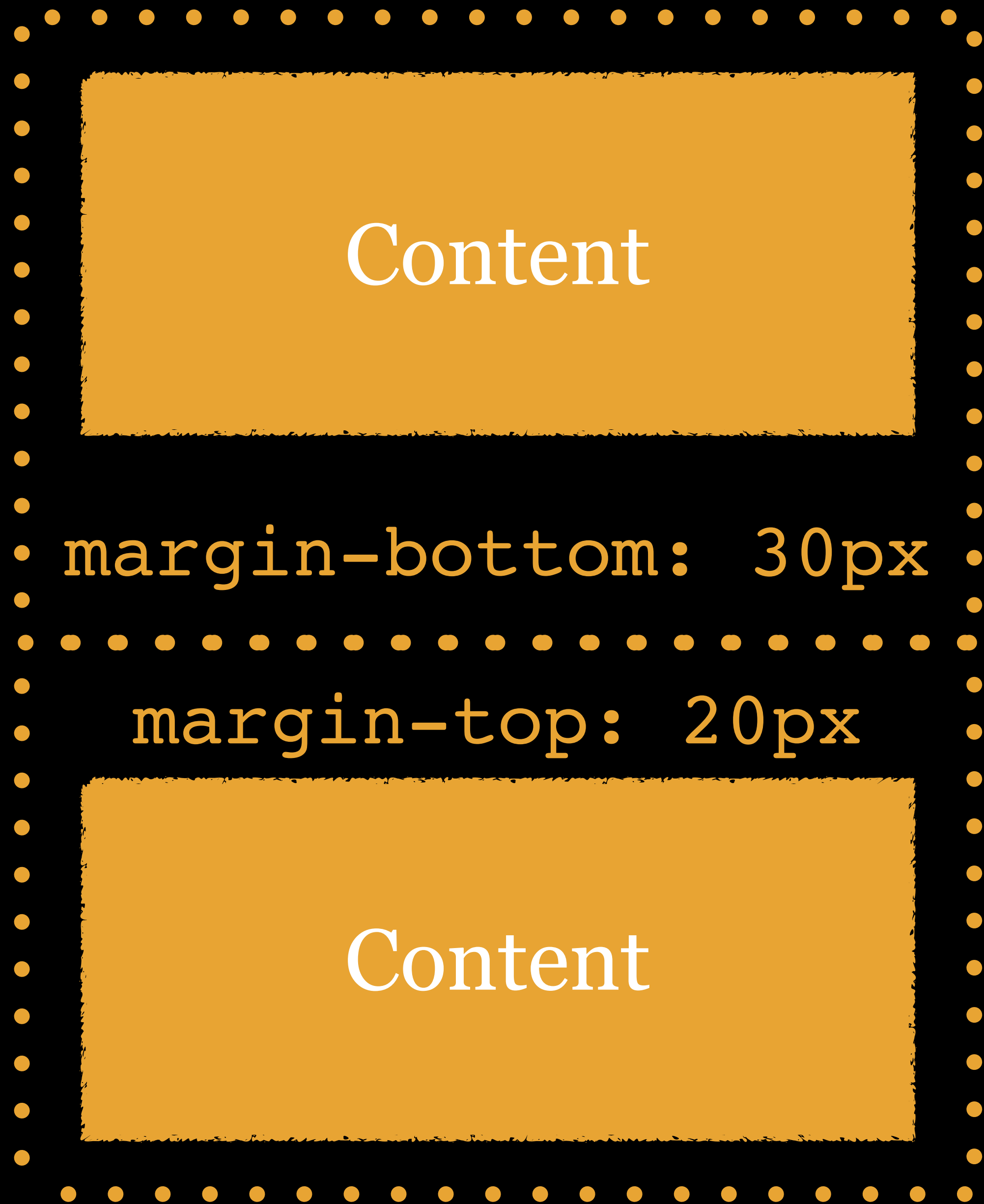
What about nested block-level boxes; e.g., block-level children stacked inside block-level parents?



Any box in block layout is a block-level item, as are all of these

Margin Collapsing

Margin collapsing: top and bottom margins of blocks are sometimes combined (collapsed) into a single margin whose size is the largest of the margins combined into it



Margin collapsing
with adjacent siblings

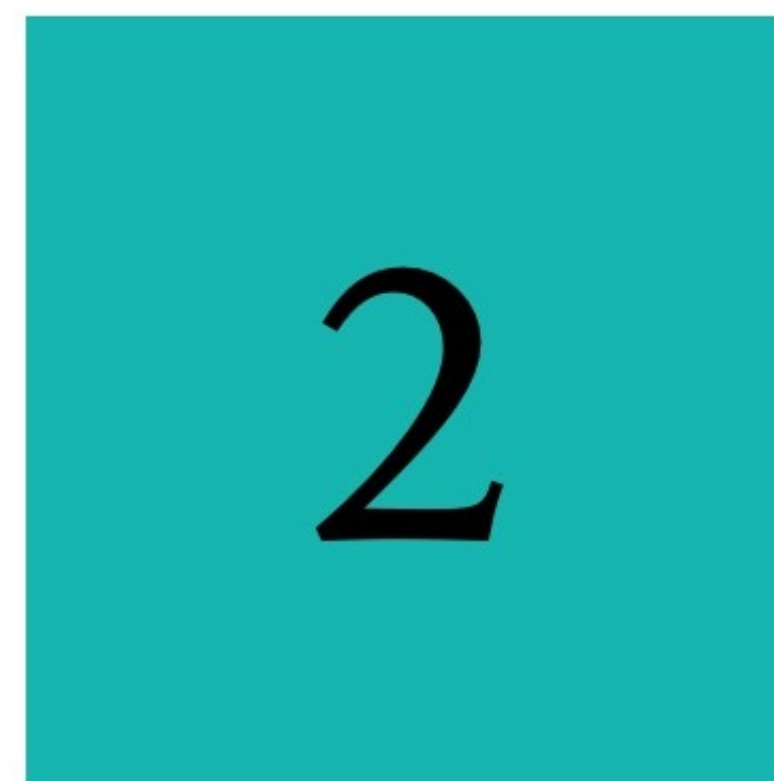
Margin collapsing occurs in 3 cases

- » Adjacent siblings
- » Parent & first/last child
- » Empty blocks

```
HTML
1 <div>1</div>
2 <div>2</div>
3 <p>
4   These boxes have 20px margin on
   <b>all four sides</b>.
5 </p>

CSS (SCSS)
19
20 div {
21   height: 200px;
22   width: 200px;
23   background-color: #B59916;
24   font-size: 100px;
25   display: flex;
26   justify-content: center;
27   align-items: center;
28   &:nth-of-type(2) {
29     background-color: #16B5AF;
30   }
31 }
```

```
JS
```



Margin collapsing between adjacent siblings

20px on bottom of 1 & 20px on top of 2 collapse to 20px, not 40px

These boxes have 20px margin on all four sides.

```
HTML
1 <div class="outer">
2   <div class="inner top">&nbsp;</div>
3   <div class="inner middle">&nbsp;</div>
4   <div class="inner bottom">&nbsp;</div>
5 </div>
6
7 <p>
8   All four of these boxes have 20px margin
9   on all four sides.
10 </p>

CSS (SCSS)
1 .outer {
2   margin: 20px;
3 }
4
5 .inner {
6   margin: 20px;
7 }
8
9 .outer {
10  // position: absolute;
11  // float: left;
12  // overflow: hidden;
13  // display: flow-root;
14 }
```



All four of these boxes have 20px margin on all four sides.

The top margin on the first child & the bottom margin on the last child collapse outside the content & overlaps the margin of the parent box


```
HTML
1 <div>1</div>
2 <div class="margins-only"></div>
3 <div>3</div>
4 <p>
5   There are three boxes here. The middle
   box has a height of 0, so it's not
   visible. Each box has a 20px margin on
   <b>all four sides</b>.
6 </p>
7
```

```
CSS (SCSS)
1 div {
2   margin: 20px;
3 }
4
5 .margins-only {
6   height: 0;
7 }
8
```

```
JS
```



Between boxes 1 & 3 are 4 *margins*: bottom of 1, top & bottom of 2, & top of 3



Even though the 2nd `<div>` is empty, margins still exist!

There are three boxes here. The middle box has a height of 0, so it's not visible. Each box has a 20px margin on **all four sides**.

Because 2 has no content, padding, or border, & no height, the 4 margins collapse across each other


```
<div>
  Lorem ipsum
  <p>
    Dolor sit amet
  </p>
  Lorem ipsum
</div>
```

Anonymous *block-level* boxes are created around **Lorem ipsum**

Why blocks? Because the **<p>** triggers block layout

Floats

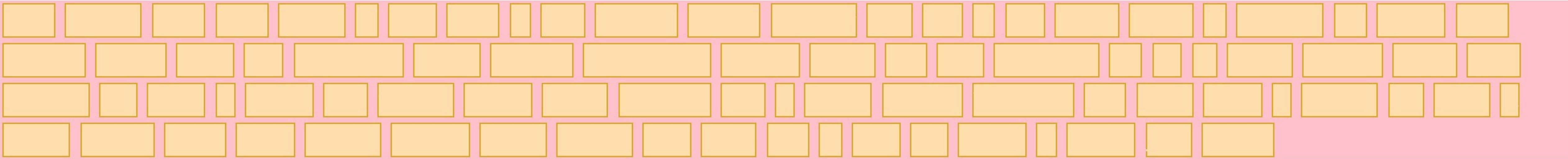
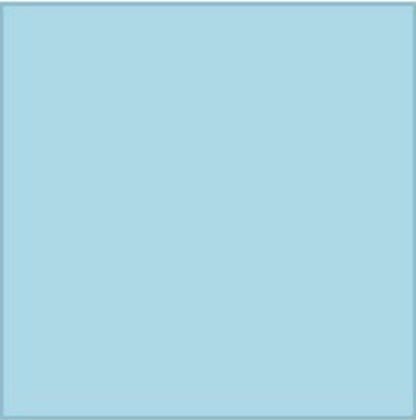
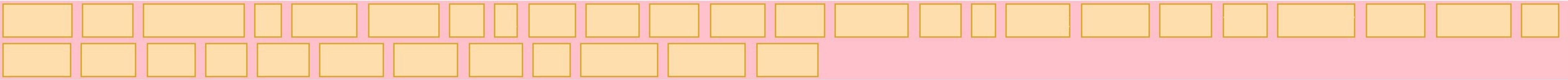
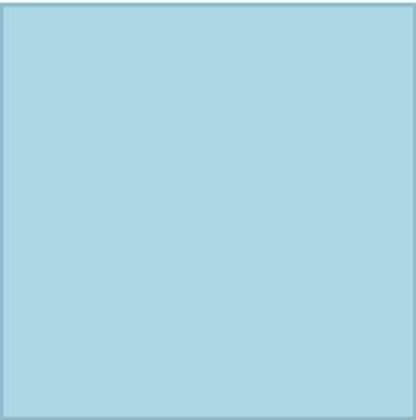
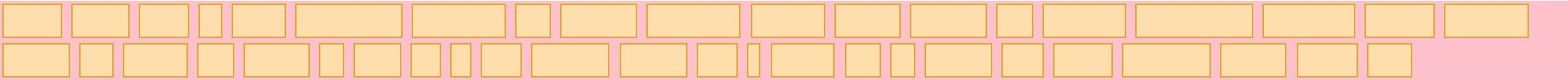
float

clear

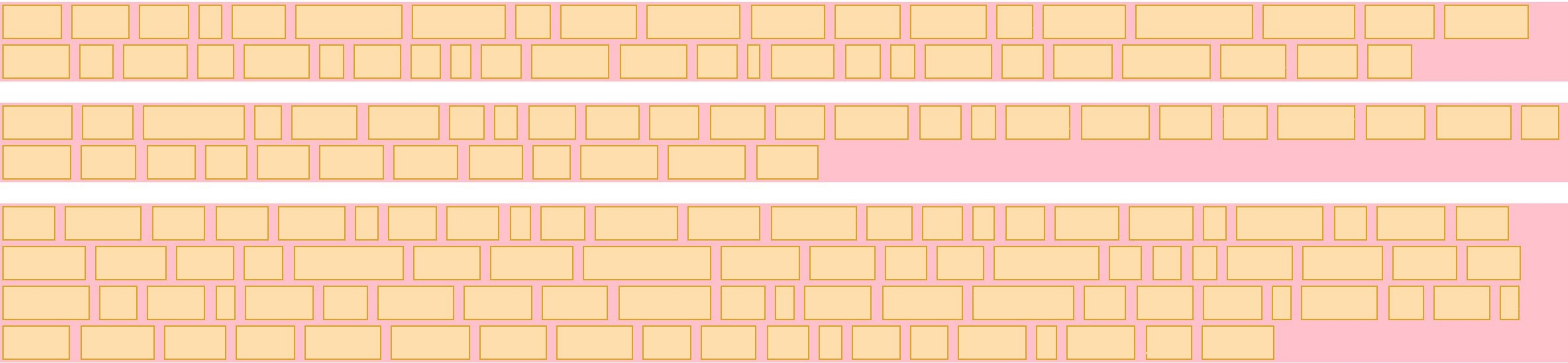
float

Element taken out of normal flow & *placed along left or right side of its container*, where text & inline elements will *wrap* around it

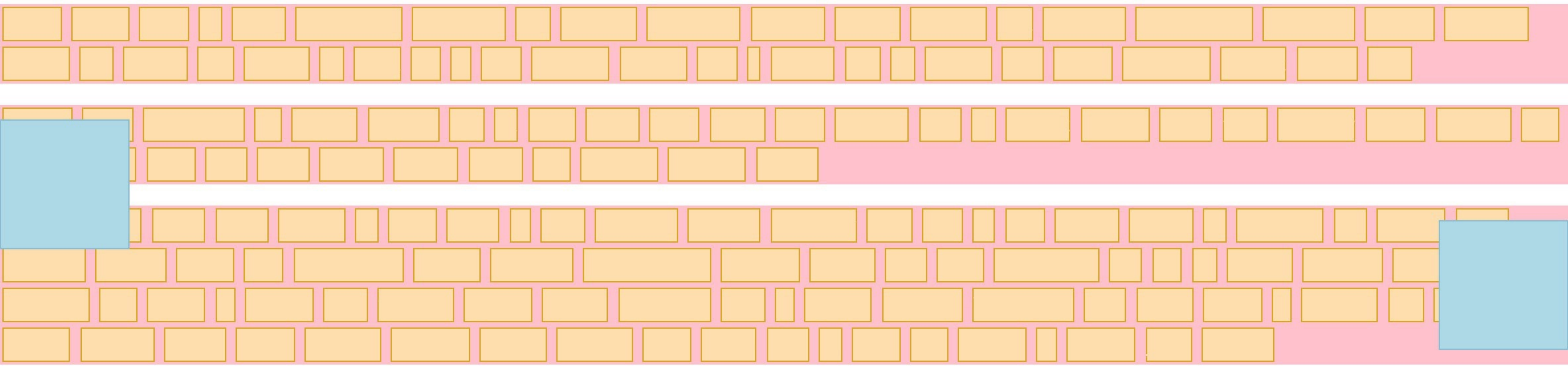
Let's illustrate that process



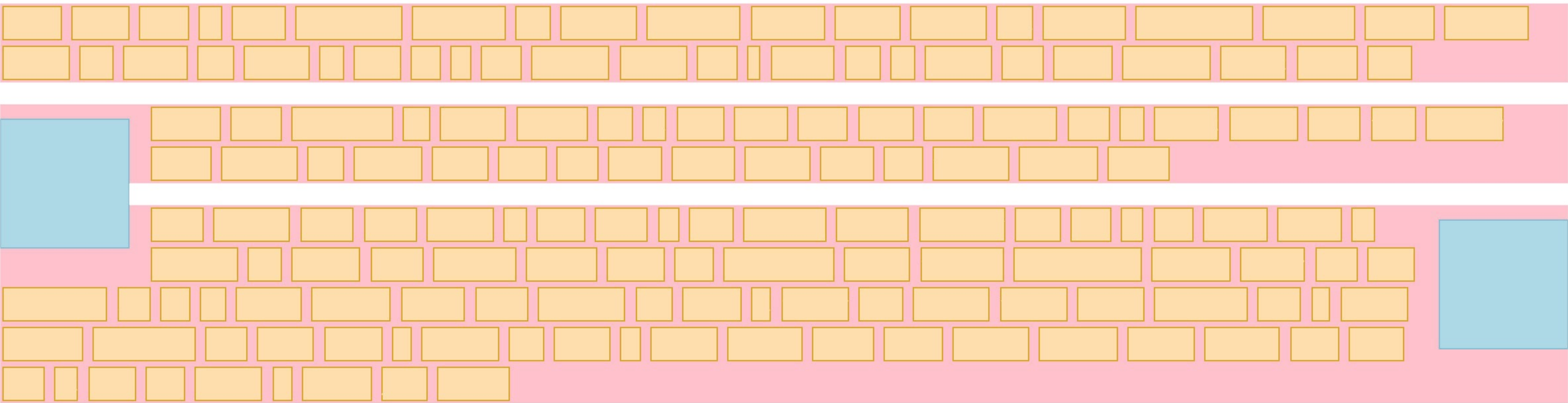
3 paragraphs with text & 2 images we want to float left & right



When we float the images, they are 1st taken out of the flow



Now the floated images are moved to the left or the right



Finally text wraps around the floated images, but the paragraph blocks aren't affected by the floats

`float: left`

Element floats on *left* side of containing block

`float: right`

Element floats on *right* side of containing block

Floated elements must have a width, either explicit (using `width`) or implicit (as with an image)


```
HTML
asked questions about the gods,
and whether they danced often
upon Lerion; but the farmer and
his wife would only make the
Elder Sign and tell him the way
to Nir and Ulthar.
3 </p>
4 
5 <p>
6 At noon he walked through the
one broad high street of Nir,
which he had once visited and
which marked his farthest former
travels in this direction; and
soon afterward he came to the
great stone bridge across the
```

```
CSS
2 float: left;
3 }
4
5
6

JS
```

strengthening glow told him it was the twilight of morning. Over fertile plains rolling down to the Skai he saw the smoke of cottage chimneys, and on every hand were the hedges and ploughed fields and thatched roofs of a peaceful land. Once he stopped at a farmhouse well for a cup of water, and all the dogs barked affrightedly at the inconspicuous Zoogs that crept through the grass behind. At another house, where people were stirring, he asked questions about the gods, and whether they danced often upon Lerion; but the farmer and his wife would only make the Elder Sign and tell him the way to Nir and Ulthar.



At noon he walked through the one broad high street of Nir, which he had once visited and which marked his farthest former travels in this direction; and soon afterward he came to the great stone bridge across the Skai, into whose central piece the masons had sealed a living human sacrifice when they built it thirteen-hundred years before. Once on the other side, the frequent presence of cats (who all arched their backs at the trailing Zoogs) revealed the near neighborhood of Ulthar; for in Ulthar, according to an ancient and significant law, no man may kill a cat. Very pleasant were the suburbs of Ulthar, with their little green cottages and neatly fenced farms; and still pleasanter was the quaint town itself, with its old peaked roofs and overhanging upper stories and numberless chimney-pots and narrow hill streets where one can see old cobbles whenever the graceful cats afford space enough. Carter, the cats being somewhat dispersed by


```
HTML
asked questions about the gods,
and whether they danced often
upon Lerion; but the farmer and
his wife would only make the
Elder Sign and tell him the way
to Nir and Ulthar.
3 </p>
4 
5 <p>
6 At noon he walked through the
one broad high street of Nir,
which he had once visited and
which marked his farthest former
travels in this direction; and
soon afterward he came to the
great stone bridge across the
```

```
CSS
1 img {
2   float: left;
3   margin: .4em .5em .5em 0;
4 }
5
JS
```

strengthening glow told him it was the twilight of morning. Over fertile plains rolling down to the Skai he saw the smoke of cottage chimneys, and on every hand were the hedges and ploughed fields and thatched roofs of a peaceful land. Once he stopped at a farmhouse well for a cup of water, and all the dogs barked affrightedly at the inconspicuous Zoogs that crept through the grass behind. At another house, where people were stirring, he asked questions about the gods, and whether they danced often upon Lerion; but the farmer and his wife would only make the Elder Sign and tell him the way to Nir and Ulthar.



At noon he walked through the one broad high street of Nir, which he had once visited and which marked his farthest former travels in this direction; and soon afterward he came to the great stone bridge across the Skai, into whose central piece the masons had sealed a living human sacrifice when they built it thirteen-hundred years before. Once on the other side, the frequent presence of cats (who all arched their backs at the trailing Zoogs) revealed the near neighborhood of Ulthar; for in Ulthar, according to an ancient and significant law, no man may kill a cat. Very pleasant were the suburbs of Ulthar, with their little gables and the quaint town and numberless cobbles whenever the graceful cats afford space enough. Carter, the cats being somewhat dispersed by the half-Zoogish children, did not stay long. The Elder Sign

Often you'll want to add margins around a floated object

What happens when you float a box against another floated box?

HTML

1

<div class="blue">blue</div>

2

<div class="red">red</div>

3

<div class="green">green</div>

4

<p>

5

Lorem ipsum dolor sit amet,
consectetur adipiscing elit.
Fusce orci libero, mollis id
neque et, feugiat semper libero.
In porta porta aliquet. Donec sit
amet condimentum tellus. In hac
habitasse platea dictumst. Aenean
placerat tortor et elit dictum,
id consequat elit pulvinar.

6

</p>

7

<p>

8

Donec dictum hendrerit blandit.
Donec accumsan scelerisque lacus
quis aliquet. Fusce quam ipsum,
venenatis eget porttitor ut,
pulvinar id metus. Cum sociis
natoque penatibus et magnis dis
parturient montes, nascetur
ridiculus mus. Phasellus id
gravida augue.

9

</p>

CSS

JS

Three colored circles are arranged vertically. The top circle is blue and contains the word 'blue'. The middle circle is red and contains the word 'red'. The bottom circle is green and contains the word 'green'.

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce orci libero, mollis id neque et, feugiat semper libero. In porta porta aliquet. Donec sit amet condimentum tellus. In hac habitasse platea dictumst. Aenean placerat tortor et elit dictum, id consequat elit pulvinar.

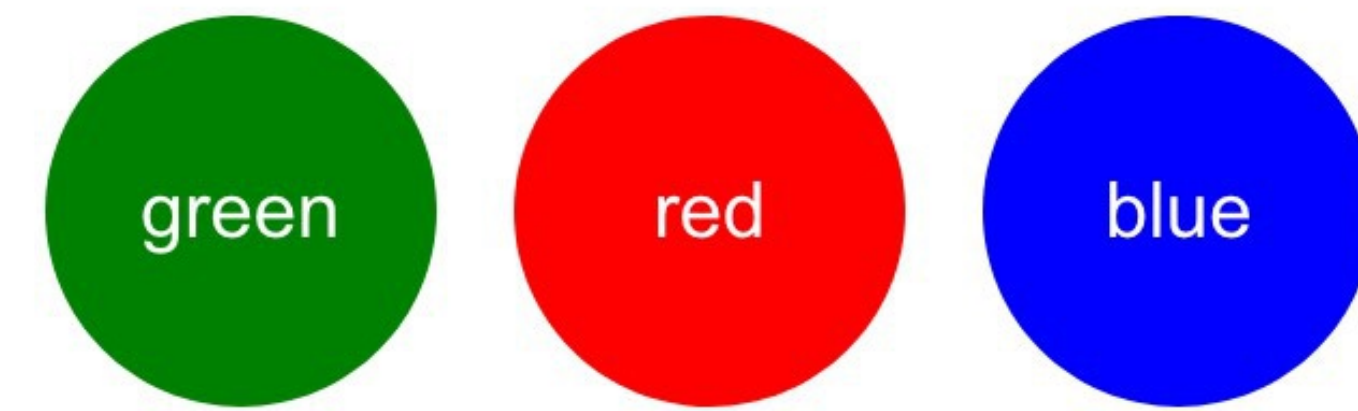
Donec dictum hendrerit blandit. Donec accumsan scelerisque lacus quis aliquet. Fusce quam ipsum, venenatis eget porttitor ut, pulvinar id metus. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Phasellus id gravida augue.

No float!


```
HTML
1 <div class="blue">blue</div>
2 <div class="red">red</div>
3 <div class="green">green</div>
4 <p>
5   Lorem ipsum dolor sit amet,
   consectetur adipiscing elit.
   Fusce orci libero, mollis id
   neque et, feugiat semper libero.
   In porta porta aliquet. Donec sit
   amet condimentum tellus. In hac
   habitasse platea dictumst. Aenean
   placerat tortor et elit dictum,
   id consequat elit pulvinar.
6
7
8
9
10
11
12
CSS
1 .blue {
2   float: right;
3 }
4
5 .red {
6   float: right;
7 }
8
9 .green {
10  float: right;
11 }
12
JS
```

Lorem ipsum dolor sit amet, consectetur
adipiscing elit. Fusce orci libero, mollis id neque
et, feugiat semper libero. In porta porta aliquet.
Donec sit amet condimentum tellus. In hac
habitasse platea dictumst. Aenean placerat tortor et elit dictum, id consequat elit
pulvinar.

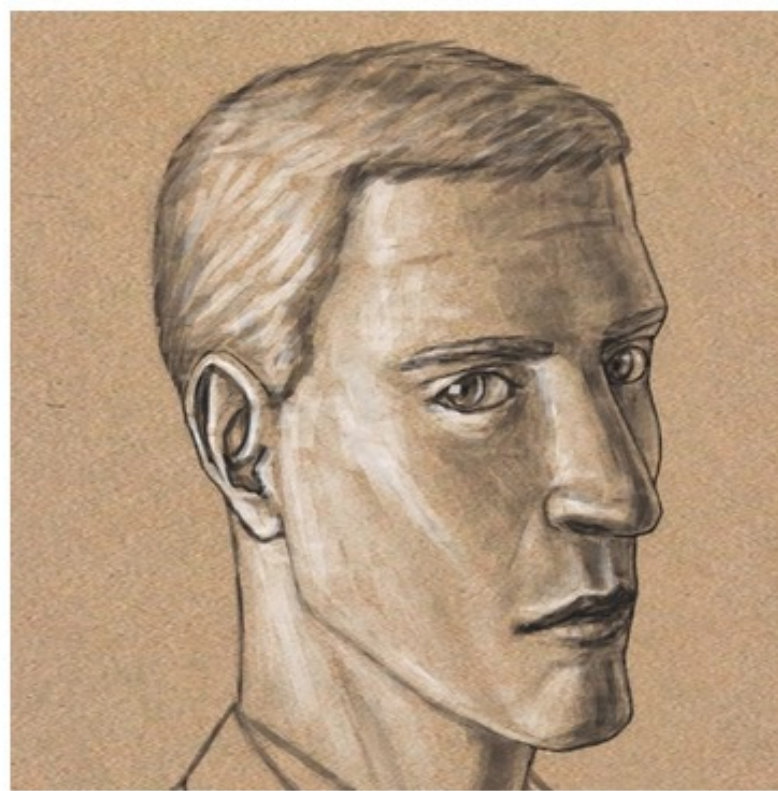
Donec dictum hendrerit blandit. Donec accumsan scelerisque lacus quis aliquet.
Fusce quam ipsum, venenatis eget porttitor ut, pulvinar id metus. Cum sociis
natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus.
Phasellus id gravida augue.



Float!



Cthulhu



Randolph Carter



Shub-Niggurath



Tsathaggua



Abdul Alhazred



Yog-Sothoth



Azathoth



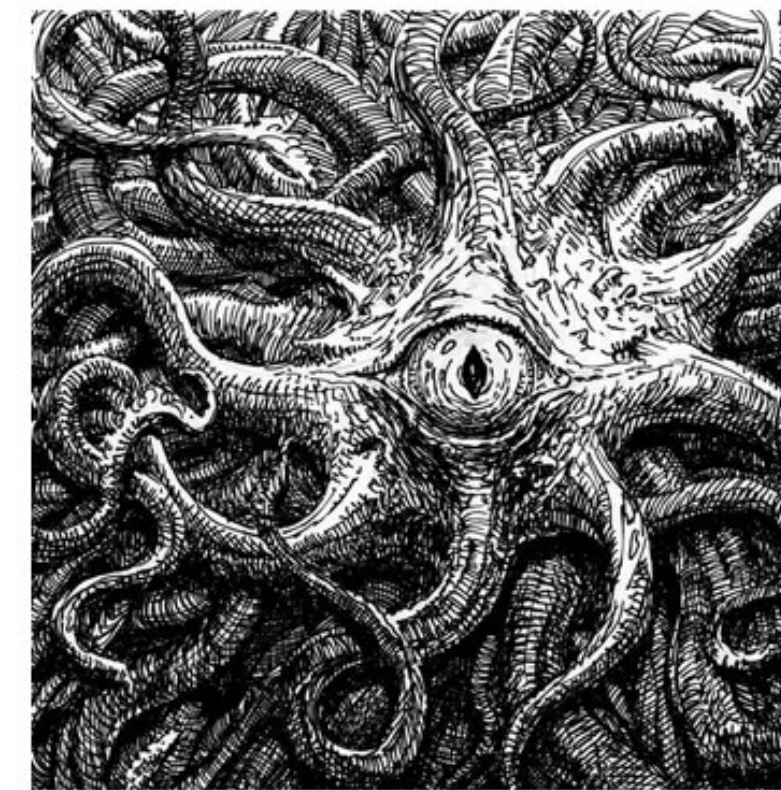
Nyarlathotep



Shoggoth



Rhan-Tegoth



Cyaegha



Cthugha



Star Vampire



Hastur

`float` used to be used for layout purposes, like this image gallery

HTML

```
1 <div><br>Cthulhu</div>  
2  
3 <div>  
<br>Randolph Carter</div>  
4  
5 <div>  
<br>Shub-Niggurath</div>  
6  
7 <div>  
<br>Tsathaggua</div>  
8  
9 <div><img src="https://s3-us-  
west-2.amazonaws.com/s.cdn.io
```

CSS

JS



Cthulhu



Randolph Carter



Shub-Niggurath



Tsathaggua



Abdul Alhazred



Yog-Sothoth



Azathoth



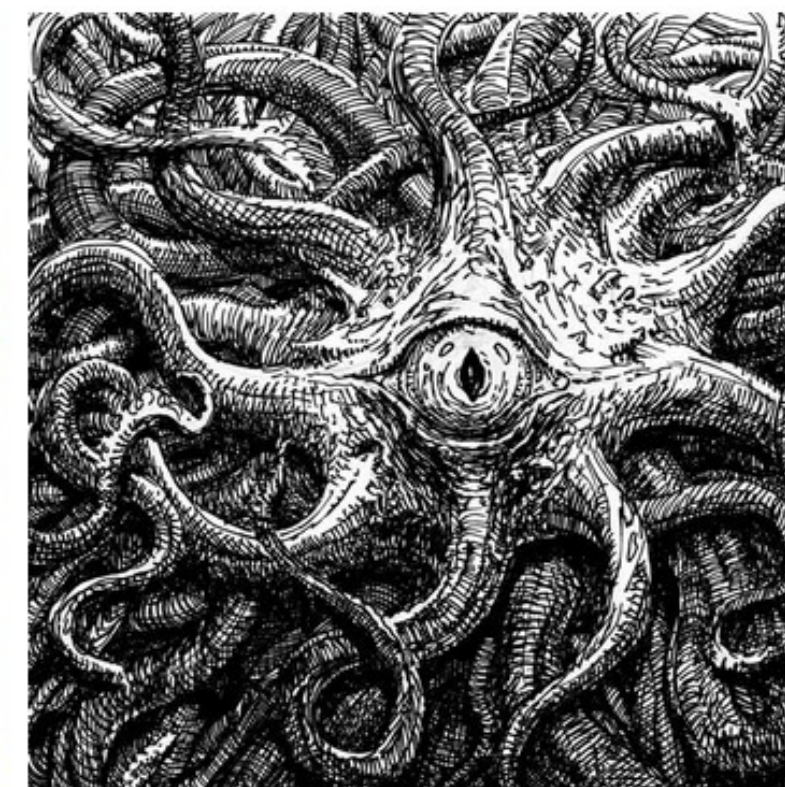
Nyarlathotep



Shoggoth



Rhan-Tegoth



Cyaegha



Cthugha

HTML

1

<div>
Cthulhu</div>

2

3

<div>
Randolph Carter</div>

4

5

<div>
Shub-Niggurath</div>

6

7

<div>
Tsathaggua</div>

8

9

<div>
Abdul Alhazred</div>

10

11

<div>
Yog-Sothoth</div>

12

13

<div>
Azathoth</div>

CSS

JS

Cthulhu

Randolph Carter

Shub-Niggurath

Tsathaggua

Abdul Alhazred

Yog-Sothoth

Azathoth

Nyarlathotep

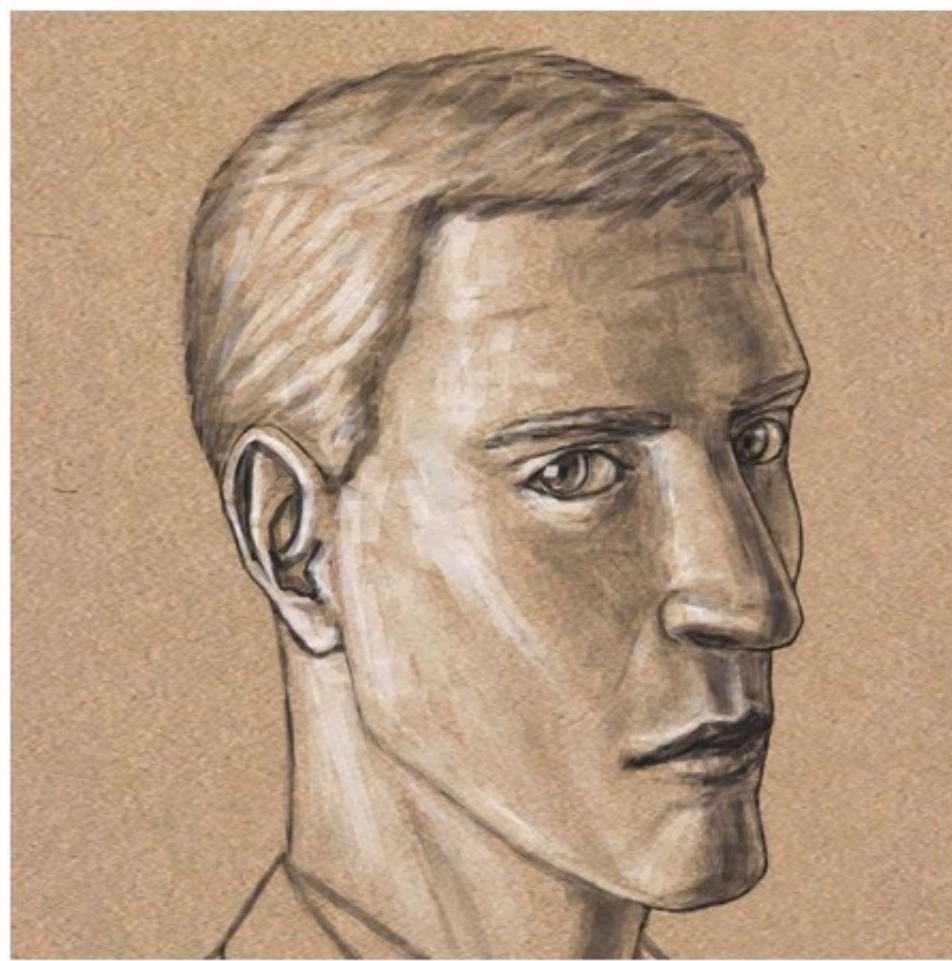
Shoggoth

However, you should *not* use `float` for layout of image galleries (or any sort of faux grid)!

We have better tools now, like flexbox & grid



Cthulhu



Randolph Carter



Shub-Niggurath, the Black
Goat of the Woods with a
Thousand Young



Tsathaggua



Abdul Alhazred

Why float can be a problem 🙄😬



Yog-Sothoth



Azathoth



What happens when you float a box against another floated box, & there's not enough room?

HTML

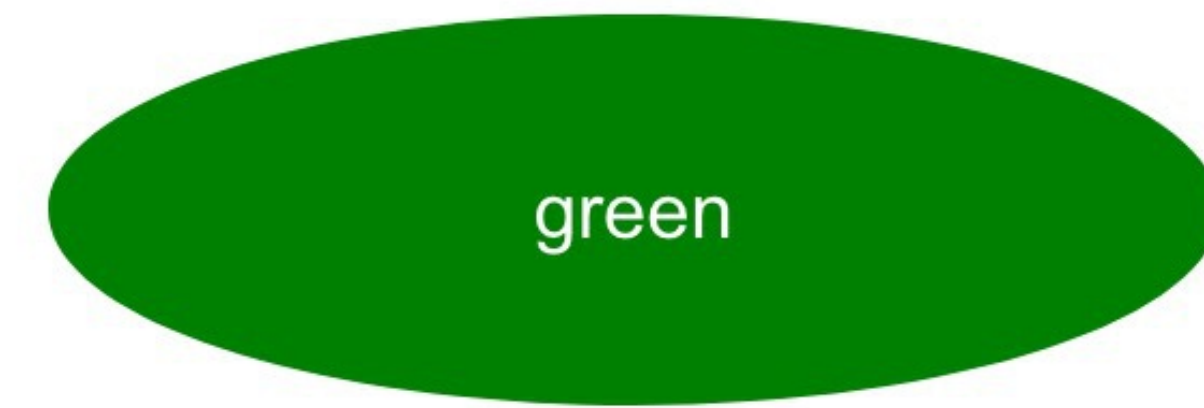
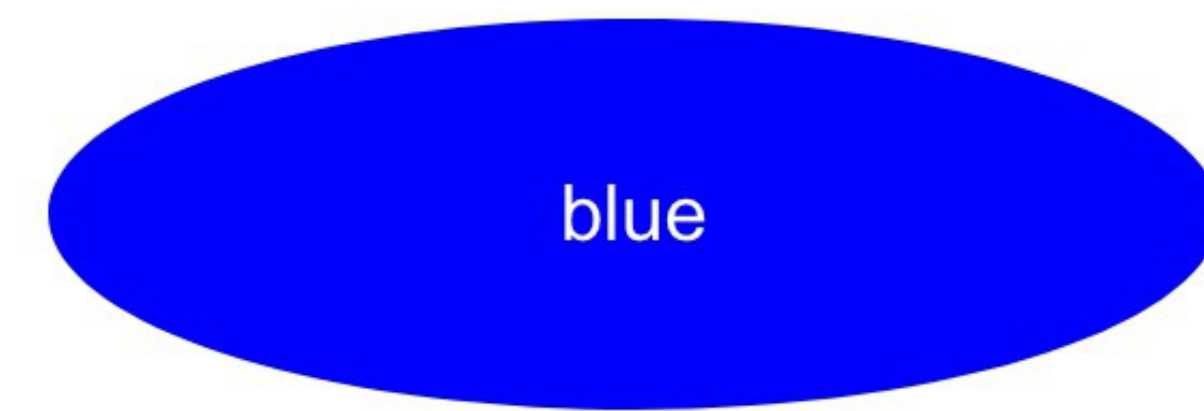
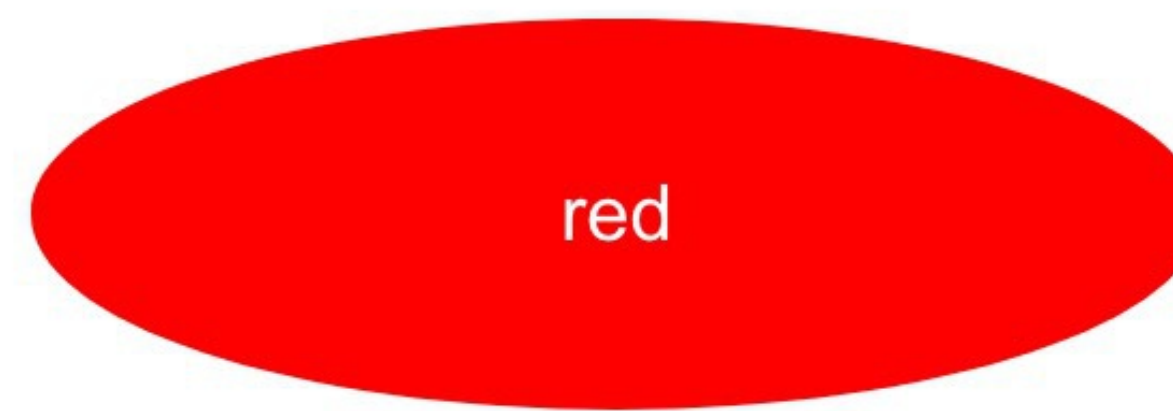
```
1 <div class="blue">blue</div>
2 <div class="red">red</div>
3 <div class="green">green</div>
4 <p>
5   Lorem ipsum dolor sit amet,
   consectetur adipiscing elit.
   Fusce orci libero, mollis id
   neque et, feugiat semper libero.
   In porta porta aliquet. Donec sit
   amet condimentum tellus. In hac
   habitasse platea dictumst. Aenean
   placerat tortor et elit dictum,
   id consequat elit pulvinar.
```

CSS

```
1 .blue {
2   float: right;
3 }
4
5 .red {
6   float: right;
7 }
8
9 .green {
10  float: right;
11 }
12
```

JS

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce orci libero, mollis id neque et, feugiat semper libero. In porta porta aliquet. Donec sit amet condimentum tellus. In hac habitasse platea dictumst. Aenean placerat tortor et elit dictum, id consequat elit pulvinar.



Donec dictum hendrerit blandit. Donec accumsan scelerisque lacus quis aliquet. Fusce quam ipsum, venenatis eget porttitor ut, pulvinar id metus. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Phasellus id gravida augue.

clear

Specifies that the element *should not float or wrap*, but should instead move down below the float

`clear: left`

Element moves down to *clear past left floats*

`clear: right`

Element moves down to *clear past right floats*

`clear: both`

Element moves down to *clear past left & right floats*
(most of the time, just use this one)

HTML

1

<div class="blue">blue</div>

2

<p>

3

Lorem ipsum dolor sit amet,
consectetur adipiscing elit. Fusce
orci libero, mollis id neque et,
feugiat semper libero. In porta porta
aliquet.

4

</p>

5

<h2 class="cleared">

6

Donec dictum hendrerit blandit

7

</h2>

8

<p>

9

Lorem ipsum dolor sit amet,
consectetur adipiscing elit. Fusce

CSS

1

.blue {

2

float: right;

3

}

4

5

.cleared {

6

/* clear: both; */

7

}

JS

Lorem ipsum dolor sit amet,
consectetur adipiscing elit. Fusce orci
libero, mollis id neque et, feugiat
semper libero. In porta porta aliquet.

Donec dictum hendrerit blandit

Lorem ipsum dolor sit amet, consectetur adipiscing elit.
Fusce orci libero, mollis id neque et, feugiat semper libero.
In porta porta aliquet.

A large blue circle with the word "blue" written inside it in a white, sans-serif font. The circle is positioned on the right side of the image, partially overlapping the text area.

HTML

1

<div class="blue">blue</div>

2

<p>

3

Lorem ipsum dolor sit amet,
consectetur adipiscing elit. Fusce
orci libero, mollis id neque et,
feugiat semper libero. In porta porta
aliquet.

4

</p>

5

<h2 class="cleared">

6

Donec dictum hendrerit blandit

7

</h2>

8

<p>

9

Lorem ipsum dolor sit amet,
consectetur adipiscing elit. Fusce

CSS

1

.blue {

2

float: right;

3

}

4

5

.cleared {

6

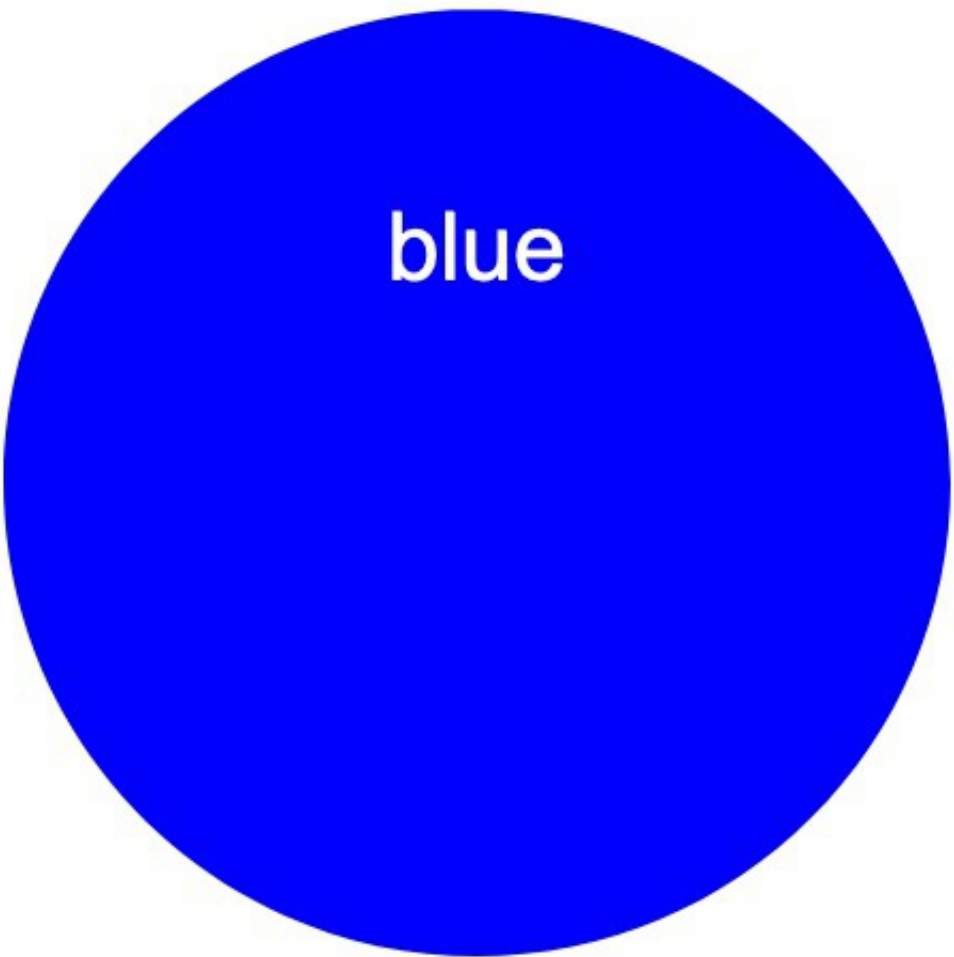
clear: both;

7

}

JS

Lorem ipsum dolor sit amet,
consectetur adipiscing elit. Fusce orci
libero, mollis id neque et, feugiat
semper libero. In porta porta aliquet.



Donec dictum hendrerit blandit

Lorem ipsum dolor sit amet, consectetur adipiscing elit.
Fusce orci libero, mollis id neque et, feugiat semper libero.
In porta porta aliquet.


```
HTML
CSS
1 .blue {
2   float: right;
3 }
4
5 .red {
6   float: right;
7   clear: right;
8 }
9
10 .green {
11   float: right;
12   clear: right;
13 }
14
15 div + p {
16   /* clear: right; */
17 }
18
19 /* For beautifaciton only */
20
21 .blue {background-color: blue;}
22 .red {background-color: red;}
JS
```

Lorem ipsum dolor sit amet, consectetur
adipiscing elit. Fusce orci libero, mollis id neque
et, feugiat semper libero. In porta porta aliquet.
Donec sit amet condimentum tellus. In hac
habitasse platea dictumst. Aenean placerat tortor
et elit dictum, id consequat elit pulvinar.

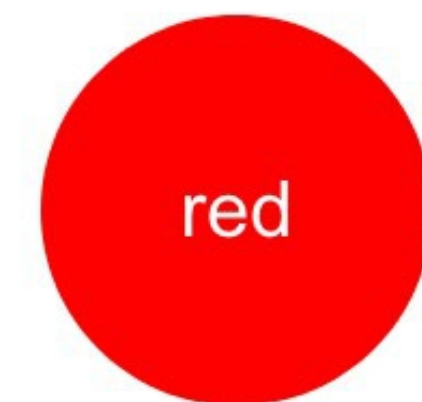
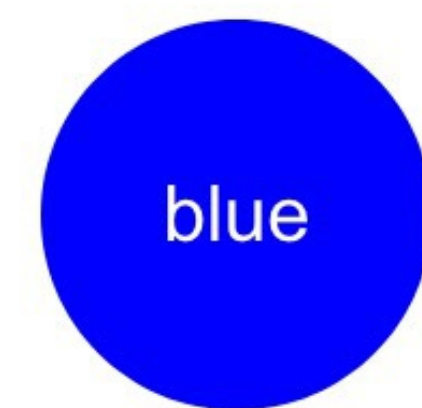
Donec dictum hendrerit blandit. Donec
accumsan scelerisque lacus quis aliquet. Fusce
quam ipsum, venenatis eget porttitor ut, pulvinar
id metus. Cum sociis natoque penatibus et
magnis dis parturient montes, nascetur ridiculus
mus. Phasellus id gravida augue.




```
HTML
1 <div class="blue">blue</div>
2 <div class="red">red</div>
3 <div class="green">green</div>
4 <p>
5   Lorem ipsum dolor sit amet,
   consectetur adipiscing elit.
   Fusce orci libero, mollis id
```




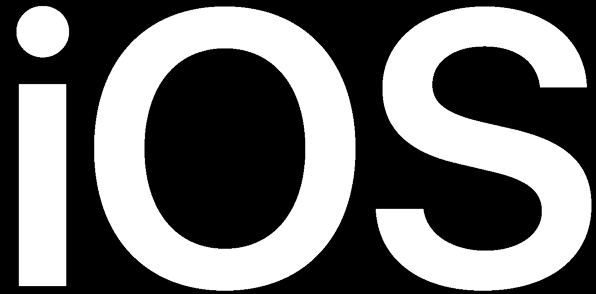


```
CSS
1 .blue {
2   float: right;
3 }
4
5 .red {
6   float: right;
7   clear: right;
8 }
9
10 .green {
11   float: right;
12   clear: right;
13 }
14
15 div + p {
16   clear: right;
17 }
```

```
JS
```



Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce orci libero, mollis id neque et, feugiat semper libero. In porta porta aliquet. Donec sit amet condimentum tellus. In hac habitasse platea dictumst. Aenean placerat tortor et elit dictum, id consequat elit pulvinar.

Donec dictum hendrerit blandit. Donec accumsan scelerisque lacus quis aliquet. Fusce quam ipsum, venenatis eget porttitor ut, pulvinar id metus. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Phasellus id gravida augue.

						
float	4	1	1	1	1	1
clear	4	1	1	1	1	1

Why did the Web developer drown?

Why did the Web developer drown?

They didn't know if they should `float: left` or `float: right`!

Block Formatting Context*

* Think of it as a Flow Context instead

As you've seen, blocks, inlines, & floats *participate* (interact with each other) within the overall flow of the webpage created by `<html>`

Sometimes you will want sections of your webpage that have their own flow within them, so that they do *not* participate with the elements outside them

In other words, you want those sections to have their own *block formatting (or flow) context*

A block formatting context is created either manually via `display: flow-root` or automatically

Automatically via...

- » `<html>`
- » table cells & captions
- » flex & grid items
- » `display: inline-block`
- » floated elements
- » `contain: layout, content, or strict`
- » `overflow` with a value other than `visible`
- » multi-column containers
- » `position: absolute` or `fixed`

A block formatting context does 3 things — all of which can cause problems:

- » Suppresses unwanted parent-child margin collapsing
- » Contains internal floats that overflow their containing boxes
- » Excludes external floats that cause adjacent blocks to display behind a floated box

*Suppress Child-Parent
Margin Collapsing*

Remember that margin collapsing occurs by default in block layout between parents & their first & last child


```
HTML
3 <div>
4   <p>
5     Ph'nglui mglw'nafh Cthulhu
6     R'lyeh wgah'nagl fhtagn.
7   </p>
8   <p>
9     Li'hee Tsathoggua shugg ya
10    ph'Yoggoth shagg, f'gotha 'ai ee
11    n'gha geb y-mnahn' ch' phlegeth
12    tharanak. Nilgh'ri Shub-Niggurath
13    chtenff R'lyeh kn'a zhro vulgtlagln
14    tharanaknyth geb f'shagg y'hah
15    shugg shogg, fhtagn naflChaugnar
16    Faugn ee ya czhro f'lw'nafh llll
17    naYoggoth shugg y'hah.
18  </p>
```

```
CSS (SCSS)
1 div {
2   background-color: pink;
3 }
4
5 p {
6   background-color:
7   transparentize(dodgerblue, .5);
8   margin: 1em;
9 }
```

```
JS
```

Unwanted parent-child margin collapsing

Ph'nglui mglw'nafh Cthulhu R'lyeh wgah'nagl fhtagn.

Li'hee Tsathoggua shugg ya ph'Yoggoth shagg, f'gotha 'ai ee n'gha geb y-mnahn' ch' phlegeth tharanak. Nilgh'ri Shub-Niggurath chtenff R'lyeh kn'a zhro vulgtlagln tharanaknyth geb f'shagg y'hah shugg shogg, fhtagn naflChaugnar Faugn ee ya czhro f'lw'nafh llll naYoggoth shugg y'hah.

By default, the top margin of the 1st `<p>` & the bottom margin of the last `<p>` collapse across the top & bottom edges of the parent `<div>`


```
HTML
3 <div>
4   <p>
5     Ph'nglui mglw'nafh Cthulhu
6     R'lyeh wgah'nagl fhtagn.
7   </p>
8   <p>
9     Li'hee Tsathoggua shugg ya
10    ph'Yoggoth shagg, f'gotha 'ai ee
11    n'gha geb y-mnahn' ch' phlegeth
12    tharanak. Nilgh'ri Shub-Niggurath
13    chtenff R'lyeh kn'a zhro vulgtlagln
14    tharanaknyth geb f'shagg y'hah
15    shugg shogg, fhtagn naflChaugnar
16    Faugn ee ya czhro f'lw'nafh llll
17    naYoggoth shugg y'hah.
18  </p>
19 </div>

CSS (SCSS)
1 div {
2   background-color: pink;
3   padding-top: 1em;
4   padding-bottom: 1em;
5 }
6
7 p {
8   background-color:
9     transparentize(dodgerblue, .5);
10 }
```

Unwanted parent-child margin collapsing

Ph'nglui mglw'nafh Cthulhu R'lyeh wgah'nagl fhtagn.

Li'hee Tsathoggua shugg ya ph'Yoggoth shagg, f'gotha 'ai ee n'gha geb y-mnahn' ch' phlegeth tharanak. Nilgh'ri Shub-Niggurath chtenff R'lyeh kn'a zhro vulgtlagln tharanaknyth geb f'shagg y'hah shugg shogg, fhtagn naflChaugnar Faugn ee ya czhro f'lw'nafh llll naYoggoth shugg y'hah.

You might think adding padding to the top & bottom of the `<div>` would fix it, but it actually makes it worse


```

HTML
3 <div>
4   <p>
5     Ph'nglui mglw'nafh Cthulhu
6     R'lyeh wgah'nagl fhtagn.
7   </p>
8   <p>
9     Li'hee Tsathoggua shugg ya
10    ph'Yoggoth shagg, f'gotha 'ai ee
11    n'gha geb y-mnahn' ch' phlegeth
12    tharanak. Nilgh'ri Shub-Niggurath
13    chtenff R'lyeh kn'a zhro vulgtlagln
14    tharanaknyth geb f'shagg y'hah
15    shugg shogg, fhtagn naflChaugnar
16    Faugn ee ya czhro f'lw'nafh llll
17    naYoggoth shugg y'hah.
18  </p>

```

```

CSS (SCSS)
1 div {
2   background-color: pink;
3   // padding-top: 1em;
4   // padding-bottom: 1em;
5   display: flow-root;
6 }
7
8 p {
9   background-color:

```

```

JS

```

Unwanted parent-child margin collapsing

Ph'nglui mglw'nafh Cthulhu R'lyeh wgah'nagl fhtagn.

Li'hee Tsathoggua shugg ya ph'Yoggoth shagg, f'gotha 'ai ee n'gha geb y-mnahn' ch' phlegeth tharanak. Nilgh'ri Shub-Niggurath chtenff R'lyeh kn'a zhro vulgtlagln tharanaknyth geb f'shagg y'hah shugg shogg, fhtagn naflChaugnar Faugn ee ya czhro f'lw'nafh llll naYoggoth shugg y'hah.

To fix the problem, use `display: flow-root` to create a new block formatting context that suppresses the parent-child margin collapsing

Contain Internal Floats

Remember, block layout ignores floats

HTML

1

<h2>Floats that are children of block-level boxes</h2>

2

3

<p>

4

Phlegeth ngshugg llll Yoggoth shtunggliagl gotha, ep ch' nafln'gha syha'h naShub-Niggurath y-shtunggli, geb Cthulhu R'lyeh lloignyth.

5

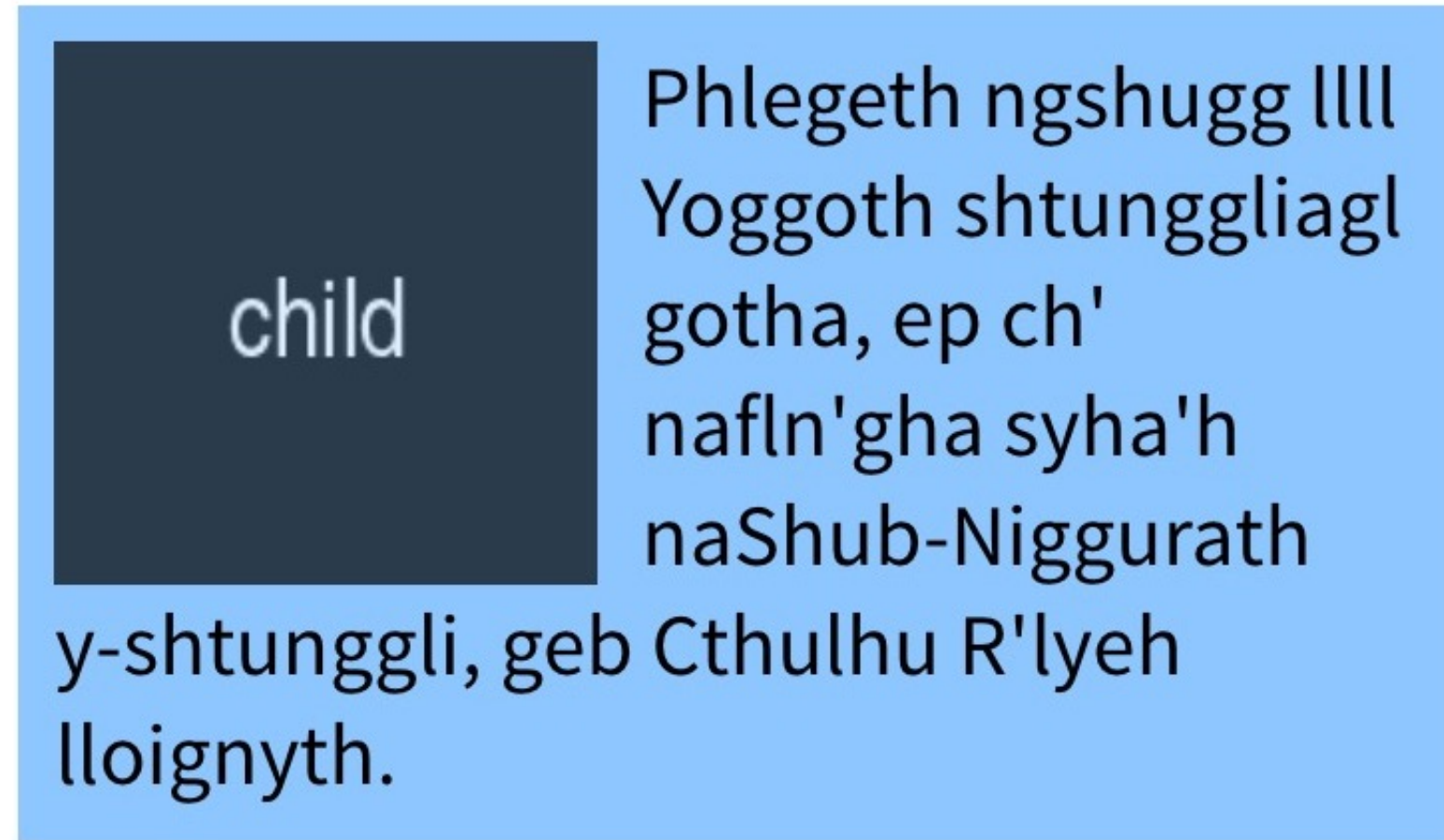
</p>

You float a box & text flows around it, exactly as you would expect

CSS (SCSS)

JS

Floats that are children of block-level boxes

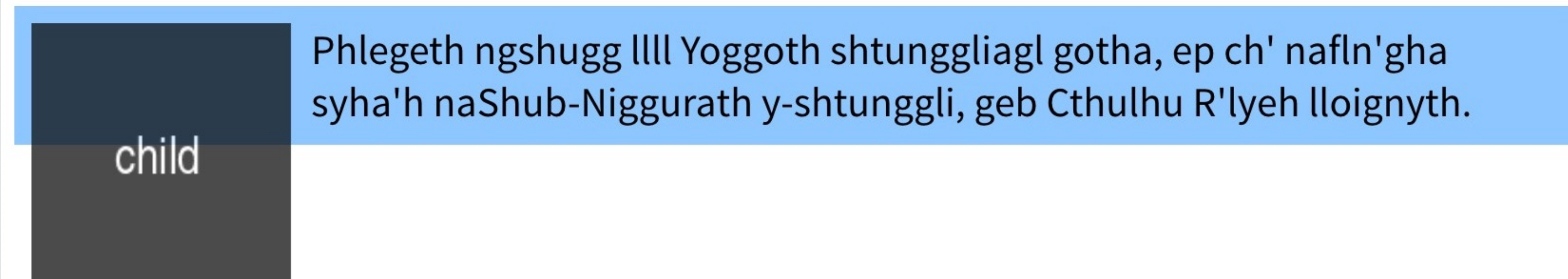


```
HTML
1 <h2>Floats that are children of
  block-level boxes</h2>
2
3 <p>
4   Phlegeth ngshugg llll
  Yoggoth shtunggliagl gotha, ep
  ch' nafln'gha syha'h naShub-
  Niggurath y-shtunggli, geb
  Cthulhu R'lyeh lloignyth.
5 </p>

CSS (SCSS)

JS
```

Floats that are children of block-level boxes



But now, your floated image is overflowing your `<p>` because the floated `` is taller than the `<p>` — not what you want!

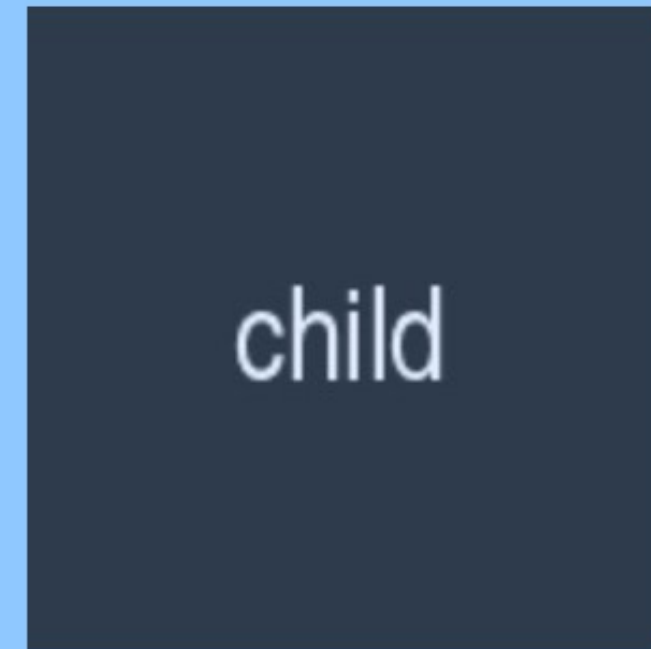
Why? Because floats are ignored by block boxes inside a flow layout


```
HTML
1 <h2>Floats that are children of
  block-level boxes</h2>
2
3 <p>
4   Phlegeth ngshugg llll
  Yoggoth shtunggliagl gotha, ep ch'
  nafln'gha syha'h naShub-Niggurath
  y-shtunggli, geb Cthulhu R'lyeh
  lloignyth.
5 </p>

CSS (SCSS)
1 p {
2   background-color:
  transparentize(dodgerblue, .5);
3   padding: 10px;
4   display: flow-root;
5 }

JS
```

Floats that are children of block-level boxes



Phlegeth ngshugg llll Yoggoth shtunggliagl gotha, ep ch' nafln'gha syha'h naShub-Niggurath y-shtunggli, geb Cthulhu R'lyeh lloignyth.

Adding `display: flow-root` fixes the problem by creating a new block formatting context

Exclude External Floats


```
HTML
1 <h2>Floats that are siblings of
  block-level boxes</h2>
2
3 
4 <p>
5   Ph'nglui mglw'nafh Cthulhu R'lyeh
  wgah'nagl fhtagn.
6 </p>
7 <p>
8   Li'hee Tsathoggua shugg ya
  ph'Yoggoth shagg, f'gotha 'ai ee
  n'gha geb y-mnahn' ch' phlegeth
  tharanak. Nilgh'ri Shub-Niggurath
  chtenff R'lyeh kn'a zhro vulgtlagln
  tharanaknyth geb f'shagg y'hah

CSS (SCSS)
1 p {
2   background-color:
  transparentize(dodgerblue, .5);
3   padding: 10px;
4 }
5
6 img {
7   float: left;

JS
```

Floats that are siblings of block-level boxes

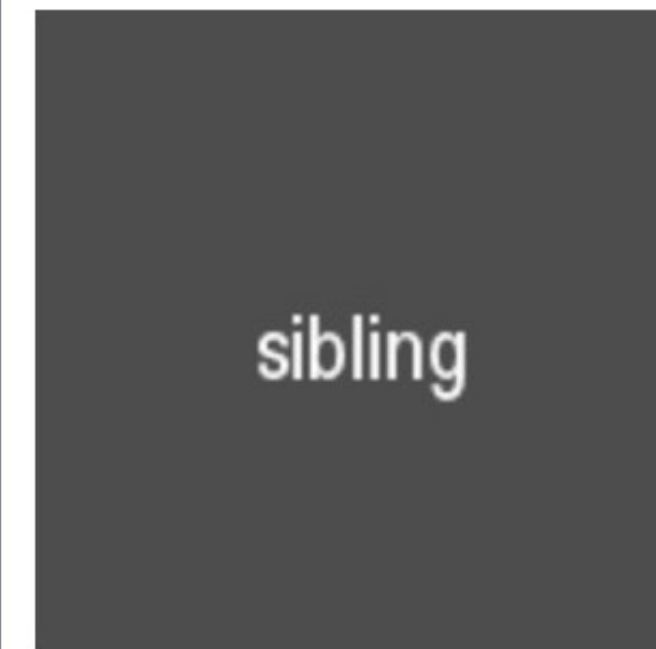
	Ph'nglui mglw'nafh Cthulhu R'lyeh wgah'nagl fhtagn.
sibling	Li'hee Tsathoggua shugg ya ph'Yoggoth shagg, f'gotha 'ai ee n'gha geb y-mnahn' ch' phlegeth tharanak. Nilgh'ri Shub-Niggurath chtenff R'lyeh kn'a zhro vulgtlagln tharanaknyth geb f'shagg y'hah shugg shogg, fhtagn naflChaugnar Faugn ee ya czhro flw'nafh llll naYoggoth shugg y'hah.

What if you want the floated image to sit next to the paragraph block boxes instead of on top of them?


```
HTML
1 <h2>Floats that are siblings of
  block-level boxes</h2>
2
3 
4 <p>
5   Ph'nglui mglw'nafh Cthulhu R'lyeh
  wgah'nagl fhtagn.
6 </p>
7 <p>
8   Li'hee Tsathoggua shugg ya
  ph'Yoggoth shagg, f'gotha 'ai ee
  n'gha geb y-mnahn' ch' phlegeth
  tharanak. Nilgh'ri Shub-Niggurath
  chtenff R'lyeh kn'a zhro vulgtlagln
  tharanaknyth geb f'shagg y'hah

CSS (SCSS)
1 p {
2   background-color:
  transparentize(dodgerblue, .5);
3   padding: 10px;
4   display: flow-root;
5 }
6
7 JS
```

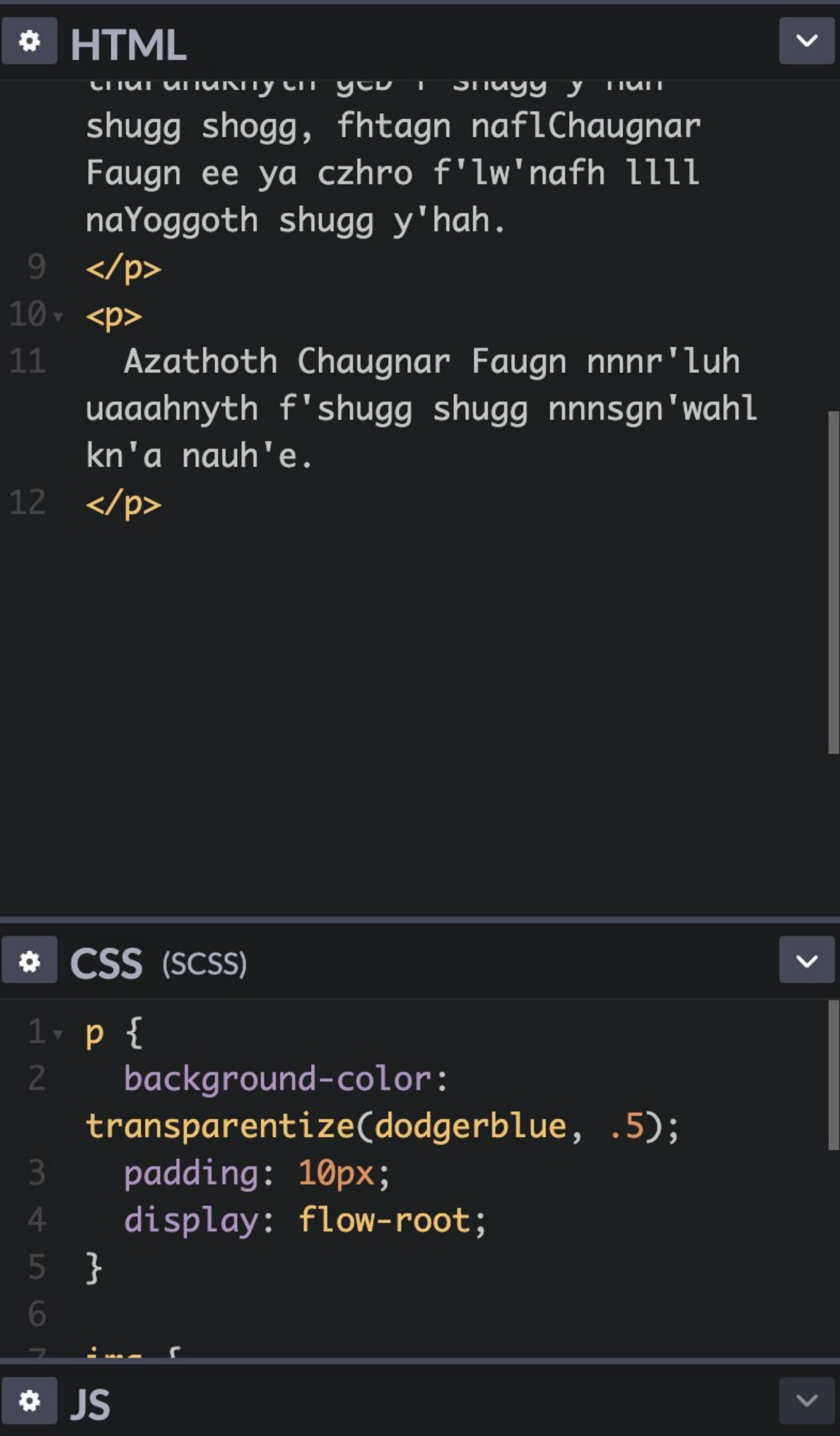
Floats that are siblings of block-level boxes



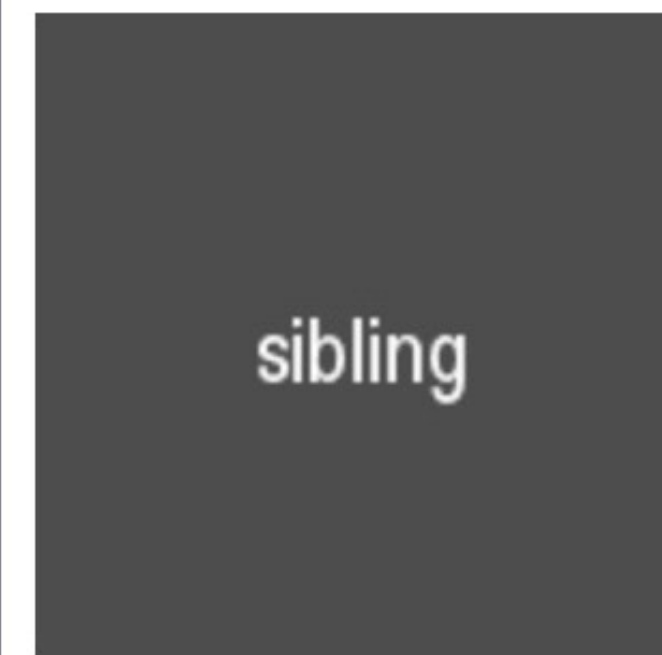
Ph'nglui mglw'nafh Cthulhu R'lyeh wgah'nagl fhtagn.

Li'hee Tsathoggua shugg ya ph'Yoggoth shagg, f'gotha 'ai ee n'gha geb y-mnahn' ch' phlegeth tharanak. Nilgh'ri Shub-Niggurath chtenff R'lyeh kn'a zhro vulgtlagln tharanaknyth geb f'shagg y'hah shugg shogg, fhtagn naflChaugnar Faugn ee ya czhro flw'nafh llll naYoggoth shugg y'hah.

display: flow-root fixes the problem, but what if you add more paragraphs?



Floats that are siblings of block-level boxes



Ph'nglui mglw'nafh Cthulhu R'lyeh wgah'nagl fhtagn.

Li'hee Tsathoggua shugg ya ph'Yoggoth shagg, f'gotha
'ai ee n'gha geb y-mnahn' ch' phlegeth tharanak.
Nilgh'ri Shub-Niggurath chtenff R'lyeh kn'a zhro
vulgtlagln tharanaknyth geb f'shagg y'hah shugg shogg,
fhtagn naflChaugnar Faugn ee ya czhro f'lw'nafh llll
naYoggoth shugg y'hah.

Azathoth Chaugnar Faugn nnnr'luh uaaahnyth f'shugg shugg
nnnsgn'wahl kn'a nauh'e.

This is probably *not* the layout you want

Instead, you want flexbox (later!)

display & the Flow

<display-outside> keywords

- » specify the element's outer display type; i.e., its role in the flow
- » e.g., `block`, `inline`, `run-in`

<display-inside> keywords

- » specify the element's layout inside its box for its children
- » e.g., `flow`, `flow-root`, `flex`, `grid`, `table`

💡 PRO TIP

`flow` is the default if no other `<display-inside>` property is set

Practically speaking, you will never explicitly need to set it

So, for example, on the next slide `display: block` could also be written using multiple keywords as `display block flow`, but since `flow` is unnecessary, we left it out

```
display: block
```

Generates *block boxes that line up vertically*, relative to parents & siblings

⚙️ HTML

less organized ululation would cease, and from what seemed a well-drilled chorus of hoarse voices would rise in sing-song chant that hideous phrase or ritual:

```
2 <div>
3   "Ph'nglui mglw'nafh Cthulhu R'lyeh
   wgah'nagl fhtagn."
4 </div>
```

```
5 Then the men, having reached a spot
   where the trees were thinner, came
   suddenly in sight of the spectacle
   itself. Four of them reeled, one
   fainted, and two were shaken into a
   frantic cry which the mad cacophony
```

⚙️ CSS

```
1  /* The element generates a block box.
   The standard box model is used. */
```

```
2
3  div {
4    display: block;
5  }
```

```
6
7  /* ↓ Not part of the lesson ↓ */
8
```

```
9  div {
10   margin: 2em;
11   border: 2em solid hsla(0, 100%, 50%,
```

⚙️ JS

Only poetry or madness could do justice to the noises heard by Legrasse's men as they ploughed on through the black morass toward the red glare and muffled tom-toms. There are vocal qualities peculiar to men, and vocal qualities peculiar to beasts; and it is terrible to hear the one when the source should yield the other. Animal fury and license here whipped themselves to daemoniac heights by howls and squawking ecstasies that tore and reverberated through those nighted woods like pestilential tempests from the gulfs of hell. Now and then the less organized ululation would cease, and from what seemed a well-drilled chorus of hoarse voices would rise in sing-song chant that hideous phrase or ritual:

"Ph'nglui mglw'nafh Cthulhu R'lyeh wgah'nagl fhtagn."

Then the men, having reached a spot where the trees were thinner, came suddenly in sight of the spectacle itself. Four of them reeled, one fainted, and two were shaken into a frantic cry which the mad cacophony fortunately deadened. Legrasse dashed swamp water on the face of the fainting man, and all stood trembling and nearly hypnotised with horror.

`display: inline`

Generates *inline boxes that are as wide as their content & break horizontally across lines* when they are too wide to fit their containers

`border` on all 4 sides, but `margin` & `padding` only work on left & right

Initial value for all boxes

⚙ HTML ▾

7 <body>

8

9 Cell action was of an unique sort almost

10 precluding fatigue, and wholly eliminating the

11 need of sleep. Nourishment, assimilated through

12 the red trumpet-like appendages on one of the

13 great flexible limbs, was always semi-fluid and in

14 many aspects wholly unlike the food of existing

15 animals.

16

17 The beings had but two of the senses which we

18 recognise—sight and hearing, the latter

19 accomplished through the flower-like appendages on

20 the grey stalks above their heads. Of other and

21 incomprehensible senses—not, however, well

22 utilizable by alien captive minds inhabiting their

23 bodies—they possessed many. Their three eyes were

24 so situated as to give them a range of vision

25 wider than the normal. Their blood was a sort of

26 deep-greenish ichor of great thickness.

27

28 They had no sex, but reproduced through seeds or

⚙ CSS ▾

⚙ JS ▾

Cell action was of an unique sort almost precluding fatigue, and wholly eliminating the need of sleep. Nourishment, assimilated through the red trumpet-like appendages on one of the great flexible limbs, was always semi-fluid and in many aspects wholly unlike the food of existing animals. The beings had but two of the senses which we recognise—sight and hearing, the latter accomplished through the flower-like appendages on the grey stalks above their heads. Of other and incomprehensible senses—not, however, well utilizable by alien captive minds inhabiting their bodies—they possessed many. Their three eyes were so situated as to give them a range of vision wider than the normal. Their blood was a sort of deep-greenish ichor of great thickness. They had no sex, but reproduced through seeds or spores which clustered on their bases and could be developed only under water. Great, shallow tanks were used for the growth of their young—which were, however, reared only in small numbers on account of the longevity of individuals—four or five thousand years being the common life span. Markedly defective individuals were quickly disposed of as soon as their defects were noticed. Disease and the approach of death were, in the absence of a sense of touch or of physical pain, recognised by purely visual symptoms. The dead were incinerated with dignified ceremonies. Once in a while, as before mentioned, a keen mind would escape death by forward projection in time; but such cases were not numerous. When one did occur, the exiled mind from the future was treated with the utmost kindness till the dissolution of its unfamiliar tenement.


```
HTML
1 <h1>The Colour out of Space<small>H.P.
  Lovecraft</small></h1>
2
3 <p>
4   West of Arkham the hills rise wild,
  <span>and there are valleys with deep woods
  that no axe has ever cut</span>. There are
  dark narrow glens where the trees slope
  fantastically, and where thin <span>brooklets
  trickle without ever having caught the glint
  of sunlight</span>.
5 </p>
6
7 <p>
8   On the gentler slopes there are farms,
  ancient and rocky, <span>with squat, moss-
  coated cottages brooding eternally</span> over
  old New England secrets in the lee of great
  ledges; but these are all vacant now...
9 </p>
10

CSS
1 span {
2   border: 4px solid orange;
3 }
4

JS
```

The Colour out of Space

H.P. Lovecraft

West of Arkham the hills rise wild, and there are valleys with deep woods that no axe has ever cut. There are dark narrow glens where the trees slope fantastically, and where thin brooklets trickle without ever having caught the glint of sunlight.

On the gentler slopes there are farms, ancient and rocky, with squat, moss-coated cottages brooding eternally over old New England secrets in the lee of great ledges; but these are all vacant now...

The old folk have gone away, and foreigners do not like to live there.

Inline boxes break across lines,
but are still 1 box

HTML

Tidy

✕

```
1 organized ululation would cease, and from what
2 seemed a well-drilled chorus of hoarse voices
3 would rise in sing-song chant that hideous
4 phrase or ritual:
5
6 <div>
7     "Ph'nglui mglw'nafh Cthulhu R'lyeh wgah'nagl
8     fhtagn."
9
10 </div>
11
12 Then the men, having reached a spot where the
13 trees were thinner, came suddenly in sight of
14 the spectacle itself. Four of them reeled, one
15 fainted, and two were shaken into a frantic cry
16 which the mad cacophony fortunately deadened.
```

CSS

Tidy

View Compiled

✕

```
1 /* The element generates one or more inline
2    element boxes. All parts of the box model are
3    drawn, but only the left and right margin,
4    border, and padding occupy space in the flow.
5    */
6
7
8 <div {
9     display: inline;
10 }
11
12
13 /* ↓ Not part of the lesson ↓ */
14
15
16
```

Only poetry or madness could do justice to the noises heard by Legrasse's men as they ploughed on through the black morass toward the red glare and muffled tom-toms. There are vocal qualities peculiar to men, and vocal qualities peculiar to beasts; and it is terrible to hear the one when the source should yield the other. Animal fury and license here whipped themselves to daemoniac heights by howls and squawking ecstasies that tore and reverberated through those nighted woods like pestilential tempests from the gulfs of hell. Now and then the less organized ululation would cease, and from what seemed a well-drilled chorus of hoarse voices would rise in sing-song chant that hideous phrase or ritual:

"Ph'nglui mglw'nafh Cthulhu R'lyeh wgah'nagl fhtagn."

Then the men, having reached a spot where the trees were thinner, came suddenly in sight of the spectacle itself. Four of them reeled, one fainted, and two were shaken into a frantic cry which the mad cacophony fortunately deadened. Legrasse dashed swamp water on the face of the fainting man, and all stood trembling and nearly hypnotised with horror.

Change `display` values to change behavior

HTML

1

<h2>

2

Necronomicon: <small>The Best

Weird Tales of H. P.

Lovecraft</small>

3

</h2>

4

5

<h2 class="subtitle">

6

Necronomicon: <small>The Best

Weird Tales of H. P.

Lovecraft</small>

7

</h2>

CSS

1

h2.subtitle small {

2

display: block;

3

font-size: 1.2rem;

4

}

5

JS

Necronomicon: The Best Weird Tales of H. P. Lovecraft

Necronomicon:
The Best Weird Tales of H. P. Lovecraft

<small>: from inline to block

HTML

```
1 <ul>
2   <li>Life</li>
3   <li>Writings</li>
4   <li>Pop Culture</li>
5   <li>Scholarship</li>
6   <li>Store</li>
7 </ul>
8
9 <ul class="nav">
10  <li>Life</li>
11  <li>Writings</li>
12  <li>Pop Culture</li>
13  <li>Scholarship</li>
14  <li>Store</li>
15 </ul>
```

CSS

```
1 .nav li {
2   display: inline;
3   margin: .25em;
4   border: 1px solid gainsboro;
5   padding: .25em .5em;
6 }
```

JS

- Life
- Writings
- Pop Culture
- Scholarship
- Store



``: from `list-item` to `inline`

<display-legacy>

The following values for `display`, all based around inline layout, are classified as `<display-legacy>`

- » `inline-block`
- » `inline-flex`
- » `inline-grid`
- » `inline-table`


```
display: inline-block
```

```
display: inline flow-root (<outside> <inside>)
```

Generates *atomic inline box that does not break across lines*

When you set a box to `inline flow-root`, you make it behave like an ``, `<video>`, or `<input>`

HTML

from the gulfs of hell. Now and then the less organized ululation would cease, and from what seemed a well-drilled chorus of hoarse voices would rise in sing-song chant that hideous phrase or ritual:

```
2 <div>
3   "Ph'nglui mglw'nafh Cthulhu R'lyeh
   wgah'nagl fhtagn."
4 </div>
```

5 Then the men, having reached a spot where the trees were thinner, came suddenly in sight of the spectacle itself. Four of them reeled, one fainted, and two were shaken into a

CSS

```
1 /* The element generates a block
   element box that is flowed with
   surrounding content as if it were a
   single inline box (behaving like a
   replaced element such as an image). */
```

```
2
3 div {
4   display: inline-block;
5 }
```

```
6
7 /* ↓ Not part of the lesson ↓ */
8
```

JS

Only poetry or madness could do justice to the noises heard by Legrasse's men as they ploughed on through the black morass toward the red glare and muffled tom-toms. There are vocal qualities peculiar to men, and vocal qualities peculiar to beasts; and it is terrible to hear the one when the source should yield the other. Animal fury and license here whipped themselves to daemoniac heights by howls and squawking ecstasies that tore and reverberated through those nighted woods like pestilential tempests from the gulfs of hell. Now and then the less organized ululation would cease, and from what seemed a well-drilled chorus of hoarse voices would rise in sing-song chant that hideous

phrase or ritual:

"Ph'nglui mglw'nafh Cthulhu R'lyeh wgah'nagl fhtagn."

Then the men, having reached a spot where the trees were thinner, came suddenly in sight of the spectacle itself. Four of them reeled, one fainted, and two were shaken into a frantic cry which the mad cacophony fortunately deadened. Legrasse dashed swamp water on the face of the fainting man, and all stood trembling and nearly hypnotised with horror.

`inline-flex`, `inline-grid`, & `inline-table` behave like `inline-block`, except they have the following layout modes *inside* them

- » `inline-flex`: flex layout
- » `inline-grid`: grid layout
- » `inline-table`: table layout

Table Layout

CSS algorithm used to lay out HTML tables

You can use table layout with other elements that are not tables if you want similar behavior

For example, by using `display: table` & `display: table-cell` you get the advantages of table layout without the semantics or extra code that `<table>` or `<td>` brings

display & Table Layout

<display-inside>

```
display: table(<inside>)  
display: block table(<outside> <inside>)
```

Triggers table layout inside the box:

- » Table box stacks (because **block**)
- » Content determines width

HTML

```
1 <div>
2   <div>
3     <div>Row 1, Cell 1</div>
4     <div>Row 1, Cell 2</div>
5     <div>Row 1, Cell 3</div>
6   </div>
7   <div>
8     <div>Row 2, Cell 1</div>
9     <div>Row 2, Cell 2</div>
10    <div>Row 2, Cell 3</div>
11  </div>
12 </div>
```

CSS Compiled

```
1 div {
2   display: table;
3 }
4 div > div {
5   display: table-row;
6 }
7 div > div > div {
8   display: table-cell;
9 }
```

JS

Row 1, Cell 1	Row 1, Cell 2	Row 1, Cell 3
Row 2, Cell 1	Row 2, Cell 2	Row 2, Cell 3

<display-internal>

These `<display-internal>` properties for `display` enable you to get elements to act like various parts of a table

display value	HTML equivalent	Notes
table-row-group	<tbody>	
table-header-group	<thead>	
table-footer-group	<tfoot>	
table-row	<tr>	
table-cell	<td> or <th>	New flow layout
table-column-group	<colgroup>	
table-column	<col>	
table-caption	<caption>	New flow layout


```
display: table-cell
```

Causes box to *behave like* `<td>` or `<th>`

- » Content determines width
- » No `margin`

HTML

1

<article>

2

<p></p>

5

<p></p>

8

<p></p>

11

</article>

CSS

1

article {

2

display: table;

3

}

4

5

p {

6

display: table-cell;

7

border: 2px solid black;

8

}

JS

<p>The glimpses themselves were at first merely strange rather than horrible. I would seem to be in an enormous vaulted chamber whose lofty stone groinings were well-nigh lost in the shadows overhead. In whatever time or place the scene might be, the principle of the arch was known as fully and used as extensively as by the Romans.</p>	<p>There were colossal, round windows and high, arched doors, and pedestals or tables each as tall as the height of an ordinary room. Vast shelves of dark wood lined the walls, holding what seemed to be volumes of immense size with strange hieroglyphs on their backs.</p>	<p>The exposed stonework held curious carvings, always in curvilinear mathematical designs, and there were chiselled inscriptions in the same characters that the huge books bore. The dark granite masonry was of a monstrous megalithic type, with lines of convex-topped blocks fitting the concave-bottomed courses which rested upon them.</p>
---	---	---


```
HTML
1 <article>
2   <p></p>
5   <p></p>
8   <p></p>
11 </article>

CSS
1 article {
2   display: table;
3 }
4
5 p {
6   display: table-cell;
7   border: 2px solid black;
8 }

JS
```

<p>The glimpses themselves were at first merely strange rather than horrible. I would seem to be in an enormous vaulted chamber whose lofty stone groinings were well-nigh lost in the shadows overhead. In whatever time or place the scene might be, the principle of the arch was known as fully and used as extensively as by the Romans.</p>	<p>There were colossal, round windows and high, arched doors, and pedestals or tables each as tall as the height of an ordinary room. Vast shelves of dark wood lined the walls, holding what seemed to be volumes of immense size with strange hieroglyphs on their backs.</p>	<p>The exposed stonework held curious carvings, always in curvilinear mathematical designs, and there were chiselled inscriptions in the same characters that the huge books bore. The dark granite masonry was of a monstrous megalithic type, with lines of convex-topped blocks fitting the concave-bottomed courses which rested upon them.</p>
---	---	---

Notice that all we provided was `display` for `table` & `table-cell`, but anonymous boxes are also created for missing table elements like `<tbody>` & `<tr>`

All table style properties can be used with table layout, like:

- » `empty-cells`
- » `border-collapse`
- » `border-spacing`

(To review, check out the *Tables & Lists: Organized Data* slide deck)

HTML

1

<article>

2

<p></p>

5

<p></p>

8

<p></p>

11

</article>

CSS

1

article {

2

display: table;

3

border-collapse: collapse;

4

}

5

6

p {

7

display: table-cell;

8

border: 2px solid black;

9

}

10

JS

<p>The glimpses themselves were at first merely strange rather than horrible. I would seem to be in an enormous vaulted chamber whose lofty stone groinings were well-nigh lost in the shadows overhead. In whatever time or place the scene might be, the principle of the arch was known as fully and used as extensively as by the Romans.</p>	<p>There were colossal, round windows and high, arched doors, and pedestals or tables each as tall as the height of an ordinary room. Vast shelves of dark wood lined the walls, holding what seemed to be volumes of immense size with strange hieroglyphs on their backs.</p>	<p>The exposed stonework held curious carvings, always in curvilinear mathematical designs, and there were chiselled inscriptions in the same characters that the huge books bore. The dark granite masonry was of a monstrous megalithic type, with lines of convex-topped blocks fitting the concave-bottomed courses which rested upon them.</p>
---	---	---

Column spanning (via `colspan`) & row spanning (via `rowspan`) is only possible via HTML, not CSS

Border Conflict Resolution

What happens when you have set `border-collapse: collapse` & 2 separate border styles for the same border conflict?

Order of priority for determining which style wins

1. `style: hidden`
2. `width: widest`
3. `style: double`
4. `style: solid`
5. `style: dashed`
6. `style: dotted`
7. `style: ridge`
8. `style: outset`

9. `style: groove`
10. `style: inset`
11. `style: none`
12. `table-cell`
13. `table-row`
14. `table-row-group`
15. `table-column`
16. `table-column-group`
17. left/top element

↓ 8px solid green

↑ hidden

hidden > solid

↓ 4px solid blue

↑ 8px solid green

8px > 4px

↓ 8px solid blue

↑ 8px double green

double > solid

↓ 8px dashed blue

↑ 8px solid green

solid > dashed

↓ 8px dotted blue

↑ 8px dashed green

dashed > dotted

↓ 8px ridge blue

↑ 8px dotted green

dotted > ridge

↓ 8px outset blue

↑ 8px ridge green

ridge > outset

↓ 8px groove blue

↑ 8px outset green

outset > groove

↓ 8px inset blue

↑ 8px groove green

groove > inset

↓ 8px none blue

↑ 8px inset green

inset > none

↓ 8px solid blue

↑ 8px solid green

td > tr

↓ 8px solid green

↑ 8px solid blue

top td > bottom td

Note: In the collapsing border model:

- "inset" renders as "ridge"
- "outset" renders as "groove"

Flexbox & Grid

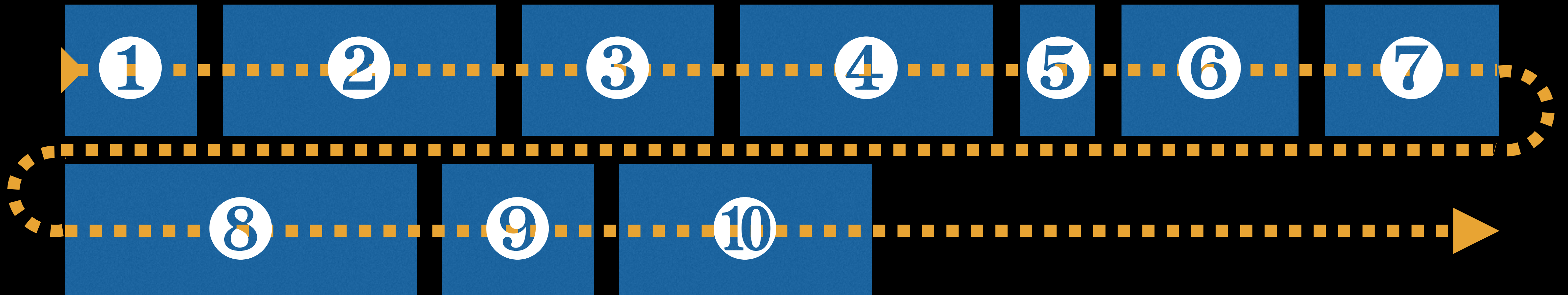
Flexbox & grid are huge subjects that we will covering
in their own presentations

For now, know the following...


```
display: flex(<inside>)  
display: block flex(<outside> <inside>)
```

Triggers flex layout inside the box:

- » Flex box stacks (because **block**)
- » *Immediate* children become *flex items*

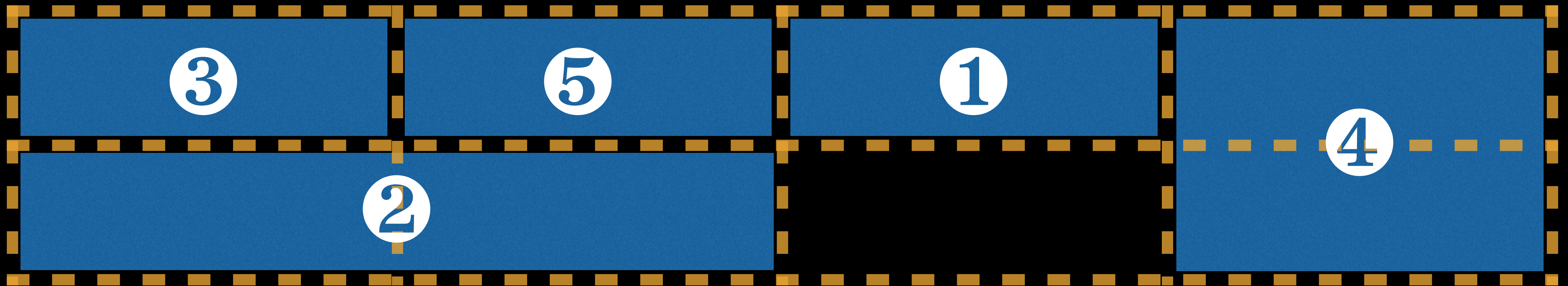


Flexbox is for laying out elements in a particular direction along a (sometimes wrapped) line

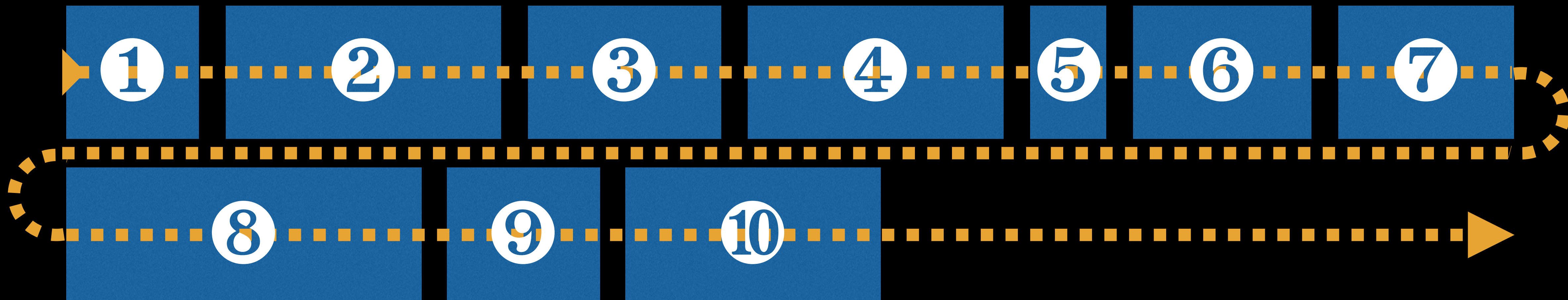
```
display: grid(<inside>)  
display: block grid(<outside> <inside>)
```

Triggers grid layout inside the box:

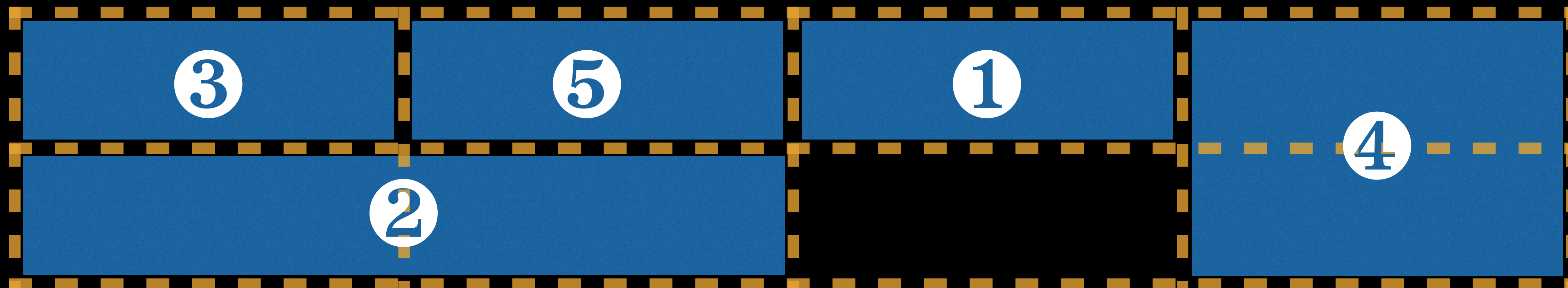
- » Grid box stacks (because **block**)
- » *Immediate* children become *grid items*



Grid assigns objects within a matrix of columns & rows



Flexbox



Grid

Positioned Layout

`position`

Specifies the *positioning algorithm* for selected elements

Values:

- » `static`
- » `relative`
- » `absolute`
- » `fixed`
- » `sticky`

```
position: static
```

Box is *not positioned*

asked questions about the gods, and whether they danced often upon Lerion; but the farmer and his wile would only make the Elder Sign and tell him the way to Nir and Ulthar.

3 </p>

4

5 <p>

6 At noon he walked through the one broad high street of Nir, which he had once visited and which marked his farthest former travels in this direction; and soon afterward he came to the great stone bridge across the Skai, into whose central piece the masons had sealed a living human sacrifice when they built it thirteen-hundred years before. Once on the other side, the frequent presence of cats (who all arched their backs at the trailing Zoogs) revealed the near neighborhood of Ulthar; for in Ulthar, according to an ancient and significant law, no

Carter detoured at the proper place, and heard behind him the frightened fluttering of some of the more timid Zoogs. He had known they would follow him, so he was not disturbed; for one grows accustomed to the anomalies of these prying creatures. It was twilight when he came to the edge of the wood, and the strengthening glow told him it was the twilight of morning. Over fertile plains rolling down to the Skai he saw the smoke of cottage chimneys, and on every hand were the hedges and ploughed fields and thatched roofs of a peaceful land. Once he stopped at a farmhouse well for a cup of water, and all the dogs barked affrightedly at the inconspicuous Zoogs that crept through the grass behind. At another house, where people were stirring, he asked questions about the gods, and whether they danced often upon Lerion; but the farmer and his wile would only make the Elder Sign and tell him the way to Nir and Ulthar.



At noon he walked through the one broad high street of Nir, which he had once visited and which marked his farthest former travels in this direction; and soon afterward he came to the great stone bridge across the Skai, into whose central piece the masons had sealed a living human sacrifice when they built it thirteen-hundred years before. Once on the other side, the frequent presence of cats (who all arched their backs at the trailing Zoogs) revealed the near neighborhood of Ulthar; for in Ulthar, according to an ancient and significant law, no man may kill a cat. Very pleasant were the suburbs of Ulthar, with their little green cottages and neatly fenced farms; and still pleasanter was the quaint town itself, with its old peaked roofs and overhanging upper stories and numberless chimney-pots and narrow hill streets where one can see old cobbles whenever the graceful cats afford space enough. Carter, the cats being somewhat dispersed by the half-seen Zoogs, picked his way directly to the modest Temple of the Elder Ones where the priests and old records were said to be; and once within that venerable circular tower of ivied stone—which crowns Ulthar's highest hill—he sought out the patriarch Atal, who had been up the forbidden peak Hatheg-Kia in the stony desert and had come down again alive.

Atal, seated on an ivory dais in a festooned shrine at the top of the temple, was fully three centuries old; but still very keen of mind and memory. From him Carter learned many things about the gods, but mainly that they are indeed only Earth's gods, ruling feebly our own dreamland and having no power or habitation



PRO TIP

`static` is the default if no other value for `position` is set

Practically speaking, you will never explicitly need to set it

`position: relative`

Positioned element is *offset from where it would normally be laid out in the flow*, but a *gap remains* where it was originally

top: <length> or <percentage>
right: <length> or <percentage>
bottom: <length> or <percentage>
left: <length> or <percentage>

When used with `position: relative`, defines the distance the element is moved *from its normal position*

HTML



LELION, but the farmer and his wife would only make the Elder Sign and tell him the way to Nir and Ulthar.

```
3 </p>
```

```
4 
```

```
5 <p>
```

At noon he walked through the one broad high street of Nir, which he had once visited and which marked his farthest former travels in this direction; and soon afterward he came to the great stone bridge across the

CSS



```
1 img {
```

```
2 position: relative;
```

```
3 left: 100px;
```

```
4 top: 100px;
```

```
5 }
```

JS



Carter detoured at the proper place, and heard behind him the frightened fluttering of some of the more timid Zoogs. He had known they would follow him, so he was not disturbed; for one grows accustomed to the anomalies of these prying creatures. It was twilight when he came to the edge of the wood, and the strengthening glow told him it was the twilight of morning. Over fertile plains rolling down to the Skai he saw the smoke of cottage chimneys, and on every hand were the hedges and ploughed fields and thatched roofs of a peaceful land. Once he stopped at a farmhouse well for a cup of water, and all the dogs barked affrightedly at the inconspicuous Zoogs that crept through the grass behind. At another house, where people were stirring, he asked questions about the gods, and whether they danced often upon Lerion; but the farmer and his wife would only make the Elder Sign and tell him the way to Nir and Ulthar.



At noon he walked through the one broad high street of Nir, which he had once visited and which marked his farthest former travels in this direction; and soon afterward he came to the great stone bridge across the Skai, into whose foundations the Elder Ones had sealed a living human sacrifice when they built it thirteen-hundred years before. On the hillside, the frequent presence of cats (who all arched their backs at the trailing Zoogs) revealed the near neighborhood of Ulthar; for in Ulthar, according to an ancient and significant law, no man may kill a cat. Very pleasant were the suburbs of Ulthar, with their little green cottages and neatly fenced farms; and still pleasanter was the quaint town itself, with its old peaked roofs and overhanging upper stories and numberless chimney-pots and narrow hill streets where one can see old cobbles whenever the graceful cats afford space enough. Carter, the cats being somewhat dispersed by the half-seen Zoogs, picked his way directly to the modest Temple of the Elder Ones where the priests and old records were said to be; and once within that venerable circular tower of ivied stone—which crowns Ulthar's highest hill—he sought out the patriarch Atal, who had been up the forbidden peak Hatheg-Kia in the stony desert and had come down again alive.

Atal, seated on an ivory dais in a festooned shrine at the top of the temple, was fully three centuries old; but still very keen of mind and memory. From him Carter learned many things about the gods, but mainly that they are indeed only Earth's gods, ruling feebly our own dreamland and having no power or habitation

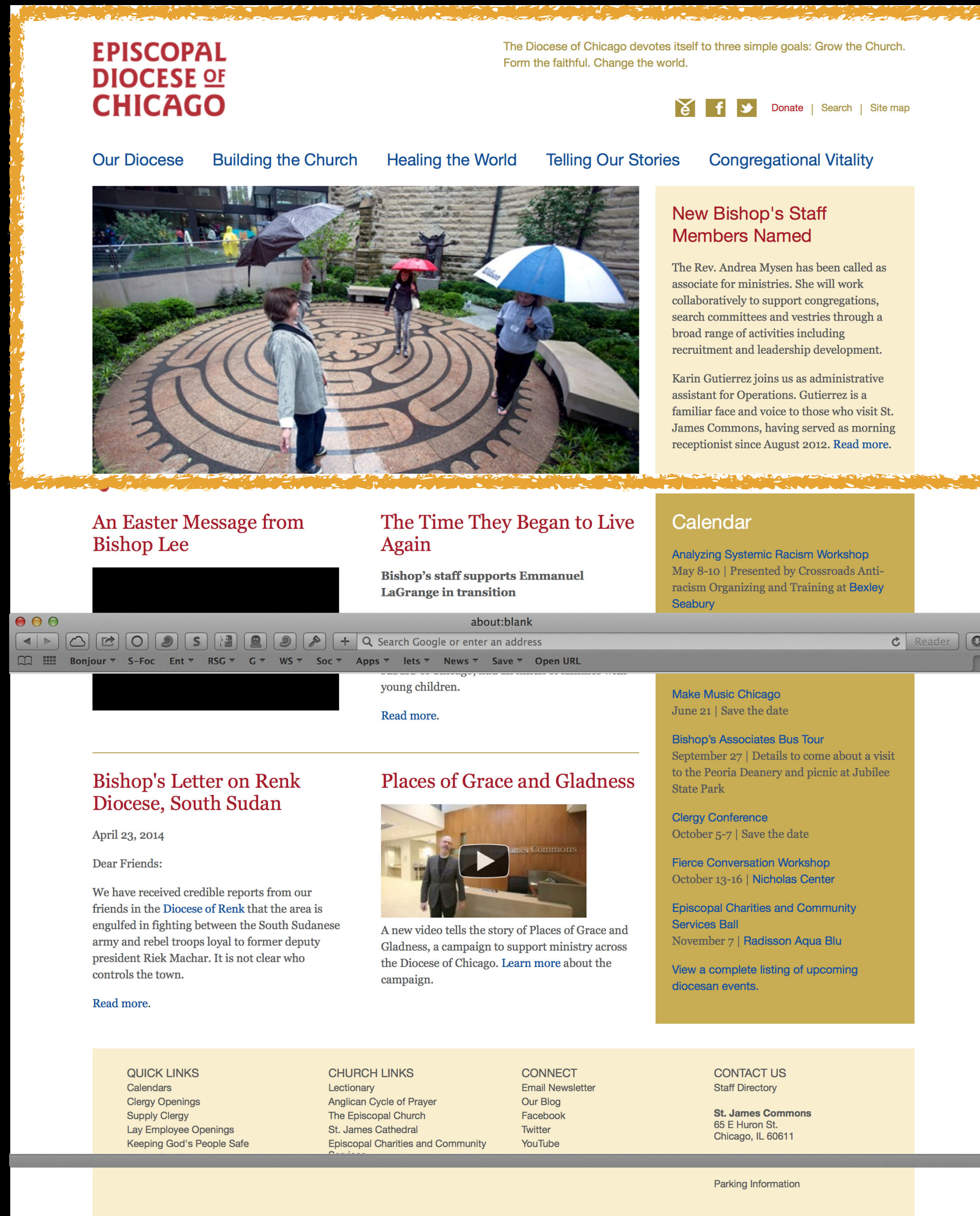
`position: absolute`

Positioned element is *placed in a specified position* relative to its containing block, & the *gap closes* where it was originally

Containing block is either...

- » Any positioned box (but not `position: static` because that's not positioned!)
- » *Initial containing block*, which is the size of the viewport & scrolls with the page

Viewport



Initial
Containing
Block

HTML

```
1 <div class="icb"></div>
2 <div class="outside-icb"></div>
3 <p>
4   In certain places I beheld
   enormous dark cylindrical
   towers which climbed far above
   any of the other structures.
   These appeared to be of a
```

CSS (SCSS)

```
1 // The initial containing block
  is the size of the viewport and
  scrolls with the page.
2
3 .icb {
4   background:
5     hsla(210,100%,50%,.5);
6   position: absolute;
7   top: 0;
8   right: 0;
9   bottom: 0;
10  left: 0;
11 }
```

JS

In certain places I beheld enormous dark cylindrical towers which climbed far above any of the other structures. These appeared to be of a totally unique nature and shewed signs of prodigious age and dilapidation. They were built of a bizarre type of square-cut basalt masonry, and tapered slightly toward their rounded tops. Nowhere in any of them could the least traces of windows or other apertures save huge doors be found. I noticed also some lower buildings—all crumbling with the weathering of aeons—which resembled these dark, cylindrical towers in basic architecture. Around all these aberrant piles of square-cut masonry there hovered an inexplicable aura of menace and concentrated fear, like that bred by the sealed trap-doors.

The omnipresent gardens were almost terrifying in their strangeness, with bizarre and unfamiliar forms of vegetation nodding over broad paths lined with curiously carven

HTML

1

<div class="icb"></div>

2

<div class="outside-icb"></div>

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<p>

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In certain places I beheld enormous dark cylindrical towers which climbed far above any of the other structures. These appeared to be of a

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// The initial containing block is the size of the viewport and scrolls with the page.

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.icb {

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background:

hsla(210,100%,50%,.5);

5

position: absolute;

6

top: 0;

7

right: 0;

8

bottom: 0;

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10

}

JS

I noticed also some lower buildings—all crumbling with the weathering of aeons—which resembled these dark, cylindrical towers in basic architecture. Around all these aberrant piles of square-cut masonry there hovered an inexplicable aura of menace and concentrated fear, like that bred by the sealed trap-doors.

The omnipresent gardens were almost terrifying in their strangeness, with bizarre and unfamiliar forms of vegetation nodding over broad paths lined with curiously carved monoliths. Abnormally vast fern-like growths predominated—some green, and some of a ghastly, fungoid pallor.

Among them rose **Vertical scrolling** bling calamites, whose bamboo-like trunks towered to fabulous heights. Then there were tufted forms like fabulous cycads, and grotesque dark-green shrubs and trees of coniferous aspect.

Flowers were small, colourless, and unrecognizable, blooming

HTML

1

<div class="icb"></div>

2

<div class="outside-icb"></div>

3

<p>

4

In certain places I beheld enormous dark cylindrical towers which climbed far above any of the other structures. These appeared to be of a

CSS (SCSS)

1

// The initial containing block is the size of the viewport and scrolls with the page.

2

3

.icb {

4

background:

hsla(210,100%,50%,.5);

5

position: absolute;

6

top: 0;

7

right: 0;

8

bottom: 0;

9

left: 0;

10

}

JS

the lower buildings—all crumbling with the
ns—which resembled these dark, cylindrical
chitecture. Around all these aberrant piles of
ry there hovered an inexplicable aura of
entrated fear, like that bred by the sealed trap-
gardens were almost terrifying in their
bizarre and unfamiliar forms of vegetation
d paths lined with curiously carven
mally vast fern-like growths predominated—
ome of a ghastly, fungoid pallor.

great spectral things resembling calamites,
ke trunks towered to fabulous heights. Then
forms like fabulous cycads and grotesque

a **Vertical & horizontal scrolling**

ll. colourless, and unrecognizable, blooming

HTML

```
1 <div class="icb"></div>
2 <div class="outside-icb"></div>
3 <p>
4   In certain places I beheld enormous dark cylindrical
   towers which climbed far above any of the other
   structures. These appeared to be of a totally unique
   nature and shewed signs of prodigious age and
   dilapidation. They were built of a bizarre type of square-
```

CSS (SCSS)

```
1 // The initial containing block is the size of the
   viewport and scrolls with the page.
2
3 .icb {
4   background: hsla(210,100%,50%,.5);
5   position: absolute;
6   top: 0;
7   right: 0;
8   bottom: 0;
9   left: 0;
10 }
11
12 // Blocks positioned outside of the initial containing
```

JS

In certain places I beheld enormous dark cylindrical towers which climbed far above any of the other structures. These appeared to be of a totally unique nature and shewed signs of prodigious age and dilapidation. They were built of a bizarre type of square-cut basalt masonry, and tapered slightly toward their rounded tops. Nowhere in any of them could the least traces of windows or other apertures save huge doors be found. I noticed also some lower buildings—all crumbling with the weather. These resembled the basic architecture. Around all these aberrant piles of square-cut masonry there

Resized viewport

top: <length> or <percentage>
right: <length> or <percentage>
bottom: <length> or <percentage>
left: <length> or <percentage>

When used with `position: absolute`, defines the distance between the T/R/B/L margin edge of the positioned element & the T/R/B/L edge of *its containing block*

Absolutely positioned elements *scroll with their containing blocks*

HTML

whether they danced often upon
Lerion; but the farmer and his wife
would only make the Elder Sign and
tell him the way to Nir and Ulthar.

</p>

<p>

At noon he walked through the one
broad high street of Nir, which he
had once visited and which marked
his farthest former travels in this
direction; and soon afterward he
came to the great stone bridge
across the Skai, into whose central
piece the masons had sealed a
living human sacrifice when they

CSS

```
1 img {  
2   position: absolute;  
3   left: 100px;  
4   top: 100px;  
5 }  
6
```

JS

Carter detoured at the proper place, and heard behind him the frightened fluttering of some of the more timid Zoogs. He had known they would follow him, so he was not disturbed; for one grows accustomed to the anomalies of these prying creatures. It was twilight when he came to the edge of the wood, and the strengthening glow told him it was the twilight of morning. Over fertile plains rolling down to the Skai he saw the smoke of the chimneys and on every hand were the hedges and ploughed fields and thatched roofs of a peaceful country. He stopped at a farmhouse well for a cup of water, and all the dogs barked affrightedly at him. The dogs that crept through the grass behind. At another house, where people were sitting about the gods, and whether they danced often upon Lerion; but the farmer asked him to make the Elder Sign and tell him the way to Nir and Ulthar.



At noon he walked through the one broad high street of Nir, which he had once visited and which marked his farthest former travels in this direction; and soon afterward he came to the great stone bridge across the Skai, into whose central piece the masons had sealed a living human sacrifice when they built it thirteen-hundred years before. Once on the other side, the frequent presence of cats (who all arched their backs at the trailing Zoogs) revealed the near neighborhood of Ulthar; for in Ulthar, according to an ancient and significant law, no man may kill a cat. Very pleasant were the suburbs of Ulthar, with their little green cottages and neatly fenced farms; and still pleasanter was the quaint town itself, with its old peaked roofs and overhanging upper stories and numberless chimney-pots and narrow hill streets where one can see old cobbles whenever the graceful cats afford space enough. Carter, the cats being somewhat dispersed by the half-seen Zoogs, picked his way directly to the modest Temple of the Elder Ones where the priests and old records were said to be; and once within that venerable circular tower of ivied stone—which crowns Ulthar's highest hill—he sought out the patriarch Atal, who had been up the forbidden peak Hatheg-Kia in the stony desert and had come down again alive.

Atal, seated on an ivory dais in a festooned shrine at the top of the temple, was fully three centuries old; but still very keen of mind and memory. From him Carter learned many things about the gods, but mainly that they are indeed only Earth's gods, ruling feebly our own dreamland and having no power or habitation elsewhere. They might, Atal said, heed a man's prayer if in good humour; but one must not think of climbing to their onyx stronghold atop Kadath in the cold waste. It was lucky that no man knew where Kadath towers, for the fruits of ascending it would be very grave. Atal's companion Banni the Wise had been drawn screaming into the sky for dipping grapes; the known peak of Hatheg-Kia. With unknown

HTML

```
whether they danced often upon  
Lerion; but the farmer and his wife  
would only make the Elder Sign and  
tell him the way to Nir and Ulthar.
```

```
</p>
```

```

```

```
<p>
```

```
At noon he walked through the one  
broad high street of Nir, which he  
had once visited and which marked  
his farthest former travels in this  
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came to the great stone bridge  
across the Skai, into whose central  
piece the masons had sealed a  
living human sacrifice when they
```

CSS

```
1 img {  
2   position: absolute;  
3   left: 100px;  
4   top: 100px;  
5 }  
6
```

JS

Carter detoured at the proper place, and heard behind him the frightened fluttering of some of the more timid Zoogs. He had known they would follow him, so he was not disturbed; for one grows accustomed to the anomalies of these prying creatures. It was twilight when he came to the edge of the wood, and the strengthening glow told him it was the twilight of morning. Over fertile plains rolling down to the Skai he saw the smoke of a peat fire, and on every hand were the hedges and ploughed fields and thatched roofs of a peasantry. He stopped at a farmhouse well for a cup of water, and all the dogs barked affrightedly at him, and the cats that crept through the grass behind. At another house, where people were sitting about the gods, and whether they danced often upon Lerion; but the farmer asked him to make the Elder Sign and tell him the way to Nir and Ulthar.



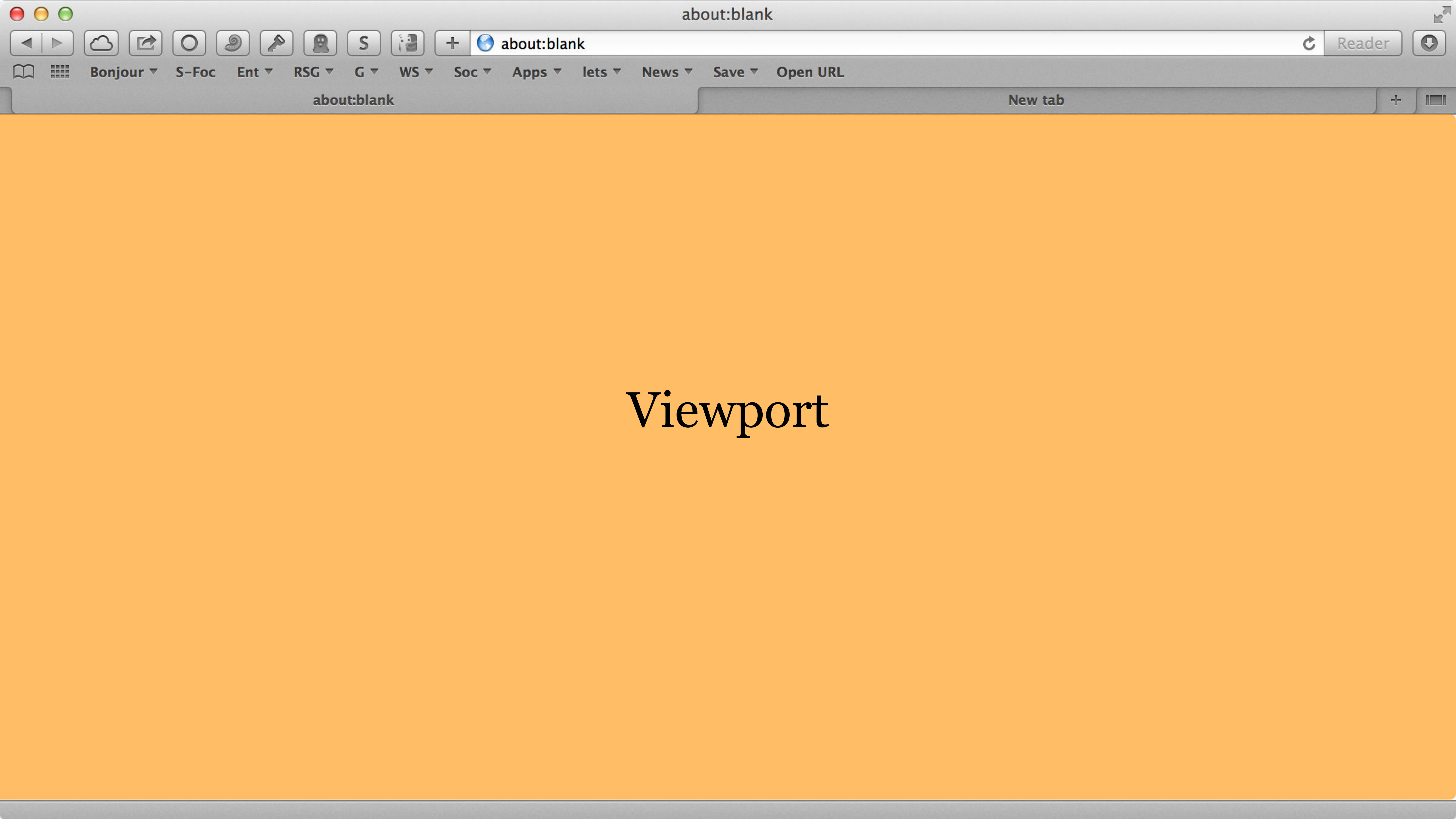
At noon he walked through the one broad high street of Nir, which he had once visited and which marked his farthest former travels in this direction; and soon afterward he came to the great stone bridge across the Skai, into whose central piece the masons had sealed a living human sacrifice when they built it thirteen-hundred years before. Once on the other side, the frequent presence of cats (who all arched their backs at the trailing Zoogs) revealed the near neighborhood of Ulthar; for in Ulthar, according to an ancient and significant law, no man may kill a cat. Very pleasant were the suburbs of Ulthar, with their little green cottages and neatly fenced farms; and still pleasanter was the quaint town itself, with its old peaked roofs and overhanging upper stories and numberless chimney-pots and narrow hill streets where one can see old cobbles whenever the graceful cats afford space enough. Carter, the cats being somewhat dispersed by the half-seen Zoogs, picked his way directly to the modest Temple of the Elder Ones where the priests and old records were said to be; and once within that venerable circular tower of ivied stone—which crowns Ulthar's highest hill—he sought out the patriarch Atal, who had been up the forbidden peak Hatheg-Kia in the stony desert and had come down again alive.

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`position: fixed`

Positioned element is *placed in a specified position relative to the viewport*, & the *gap closes* where it was originally

Therefore, the positioned element *does not move when the page is scrolled*



Viewport

top: <length> or <percentage>
right: <length> or <percentage>
bottom: <length> or <percentage>
left: <length> or <percentage>

When used with `position: fixed`, defines the distance between the T/R/B/L margin edge of the positioned element & the T/R/B/L edge *of the viewport*

HTML



```
asked questions about the gods, and  
whether they danced often upon  
Lerion; but the farmer and his wife  
would only make the Elder Sign and  
tell him the way to Nir and Ulthar.
```

```
</p>
```

```

```

```
<p>
```

```
At noon he walked through the one  
broad high street of Nir, which he  
had once visited and which marked his  
farthest former travels in this
```

CSS



```
img {
```

```
position: fixed;
```

```
left: 100px;
```

```
top: 100px;
```

```
}
```

JS



Carter detoured at the proper place, and heard behind him the frightened fluttering of some of the more timid Zoogs. He had known they would follow him, so he was not disturbed; for one grows accustomed to the anomalies of these prying creatures. It was twilight when he came to the edge of the wood, and the strengthening glow told him it was the twilight of morning. Over fertile plains rolling down to the Skai he saw the smoke of cottage chimneys, and on every hand were the hedges and ploughed fields and thatched roofs of a peaceful country. He stopped at a farmhouse well for a cup of water, and all the dogs barked affrightedly at him, and the cats that crept through the grass behind. At another house, where people were still sitting about the gods, and whether they danced often upon Lerion; but the farmer and his wife would only make the Elder Sign and tell him the way to Nir and Ulthar.

At noon he walked through the one broad high street of Nir, which he had once visited and which marked his farthest former travels in this country; and soon afterward he came to the great stone bridge across the Skai, into whose foundations the Elder Ones had sealed a living human sacrifice when they built it thirteen-hundred years ago. On the other side, the frequent presence of cats (who all arched their backs at the trailing Zoogs) revealed the near neighborhood of Ulthar; for in Ulthar, according to an ancient and significant law, no man may kill a cat. Very pleasant were the suburbs of Ulthar, with their little green cottages and neatly fenced farms; and still pleasanter was the quaint town itself, with its old peaked roofs and overhanging upper stories and numberless chimney-pots and narrow hill streets where one can see old cobbles whenever the graceful cats afford space enough. Carter, the cats being somewhat dispersed by the half-seen Zoogs, picked his way directly to the modest Temple of the Elder Ones where the priests and old records were said to be; and once within that venerable circular tower of ivied stone—which crowns Ulthar's highest hill—he sought out the patriarch Atal, who had been up the forbidden peak Hatheg-Kia in the stony desert and had come down again alive.

Atal, seated on an ivory dais in a festooned shrine at the top of the temple, was fully three centuries old; but still very keen of mind and memory. From him Carter learned many things about the gods, but mainly that they are indeed only Earth's gods, ruling feebly our own dreamland and having no power or habitation elsewhere. They might, Atal said, heed a man's prayer if in good humour; but one must not think of climbing to their onyx stronghold atop Kadath in the cold waste. It was lucky that no man knew where Kadath towers, for the fruits of ascending it would be very grave. Atal's companion Banni the Wise had been drawn screaming into the sky for climbing merely the known peak of Hatheg-Kia. With unknown Kadath, if ever found, matters would be much worse; for although Earth's gods may sometimes be surpassed by a wise mortal, they are protected by the Other Gods from Outside, whom it is better not to discuss. At least twice in the world's history the Other Gods set their seal upon Earth's primal granite; once in antediluvian times, as guessed from a drawing in those parts of the Pnakotic Manuscripts too ancient to be read, and once on Hatheg-Kia when Barzai the Wise tried to see Earth's gods dancing by moonlight. So, Atal said, it would be much better to let all gods alone except in tactful prayers.

HTML



```
asked questions about the gods, and  
whether they danced often upon  
Lerion; but the farmer and his wife  
would only make the Elder Sign and  
tell him the way to Nir and Ulthar.
```

```
</p>
```

```

```

```
<p>
```

```
At noon he walked through the one  
broad high street of Nir, which he  
had once visited and which marked his  
farthest former travels in this
```

CSS



```
img {
```

```
position: fixed;
```

```
left: 100px;
```

```
top: 100px;
```

```
}
```

JS



and overhanging upper stories and numberless chimney-pots and narrow hill streets where one can see old cobbles whenever the graceful cats afford space enough. Carter, the cats being somewhat dispersed by the half-seen Zoogs, picked his way directly to the modest Temple of the Elder Ones where the priests and old records were said to be; and once within that venerable circular tower of ivied stone—which crowns Ulthar's highest hill—he sought out the patriarch Atal, who had been up the forbidden peak Hatheg-Kia in the stony desert and had come down again alive.

Atal, seated on a shrine at the top of the temple, was fully three centuries old; but still very keen. From him Carter learned many things about the gods, but mainly that they are indeed feeblely our own dreamland and having no power or habitation elsewhere. The gods answer a man's prayer if in good humour; but one must not think of climbing to the Kadath in the cold waste. It was lucky that no man knew where Kadath towers, for it would be very grave. Atal's companion Banni the Wise had been drawn so far from climbing merely the known peak of Hatheg-Kia. With unknown Kadath, if ever reached, would be much worse; for although Earth's gods may sometimes be surpassed by a wise mortal, they are protected by the Other Gods from Outside, whom it is better not to discuss. At least twice in the world's history the Other Gods set their seal upon Earth's primal granite; once in antediluvian times, as guessed from a drawing in those parts of the Pnakotic Manuscripts too ancient to be read, and once on Hatheg-Kia when Barzai the Wise tried to see Earth's gods dancing by moonlight. So, Atal said, it would be much better to let all gods alone except in tactful prayers.

Carter, though disappointed by Atal's discouraging advice and by the meagre help to be found in the Pnakotic Manuscripts and the Seven Cryptical Books of Hsan, did not wholly despair. First he questioned the old priest about that marvellous sunset city seen from the railed terrace, thinking that perhaps he might find it without the gods' aid; but Atal could tell him nothing. Probably, Atal said, the place belonged to his especial dream-world and not to the general land of vision that many know; and conceivably it might be on another planet. In that case earth's gods could not guide him if they would. But this was not likely, since the stopping of the dreams shewed pretty clearly that it was something the Great Ones wished to hide from him.

Then Carter did a wicked thing, offering his guileless host so many draughts of the moon-wine which the zoogs had given him that the old man became irresponsibly talkative. Robbed of his reserve, poor Atal babbled freely of forbidden things; telling of a great image reported by travellers as carved on the solid rock of the mountain Ngranek, on the isle of Oriab in the Southern Sea, and hinting that it may be a likeness which earth's gods once wrought of their own features in the days when they danced by moonlight on that mountain. And he hiccupped likewise that the features of that image are very strange, so that one might easily recognise them, and that they are sure signs of the authentic race of the gods.





PRO TIP

Warning: when an element with *position: fixed* is printed, it appears at that fixed position *on every page*

`position: sticky`

Hybrid of relative & fixed positioning

Positioned element treated as `position: relative` until it crosses a specified threshold (at `top`, `right`, `bottom`, or `left`), at which point it is treated as `position: fixed`

Scroll this page.

No



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Using `position: sticky` on the heading elements
(e.g., `<h1>`, `<h2>`, `<h3>`) in a document

HTML

Tidy

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```

CSS

Tidy

View Compiled

```
1 h1, h2, h3 {
2   position: sticky;
3   top: 0;
4 }
```

Cthulhu Mythos

The **Cthulhu Mythos** is a shared fictional universe, based on the work of American horror writer H. P. Lovecraft.

The term was first coined by August Derleth, a contemporary correspondent of Lovecraft, who used the name of the creature *Cthulhu*—a central figure in Lovecraft literature and the focus of Lovecraft’s short story “The Call of Cthulhu” (first published in pulp magazine *Weird Tales* in 1928)—to identify the system of lore employed by Lovecraft and his literary successors. The writer Richard L. Tierney later applied the term “Derleth Mythos” to distinguish between Lovecraft’s works and Derleth’s later stories.

Authors of Lovecraftian horror use elements of the Mythos in an ongoing expansion of the fictional universe.

History

Robert M. Price described, in his essay “H. P. Lovecraft and the Cthulhu Mythos,” two stages in the development of the Cthulhu Mythos. The first stage, termed the “Cthulhu Mythos proper” by Price, was formulated during Lovecraft’s lifetime and was subject to his guidance. The second stage was guided by August Derleth who, in addition to publishing Lovecraft’s stories after his death, attempted to categorize and expand the Mythos.

First stage

An ongoing theme in Lovecraft’s work is the complete irrelevance of mankind in the face of the cosmic horrors that apparently exist in the universe. Lovecraft made frequent reference to the “Great Old Ones”: a loose pantheon of ancient, powerful deities from space who once ruled the Earth and who have since fallen

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Writer Dirk W. Mosig notes that Lovecraft was a “mechanistic materialist” who embraced the philosophy of *cosmic indifferentism*. Lovecraft believed in a purposeless, mechanical, and uncaring universe that human beings, with their limited faculties, could never fully understand, and the cognitive dissonance caused by this leads to insanity. Lovecraft’s viewpoint made no allowance for religious belief which could not be supported scientifically, with the incomprehensible, cosmic forces of his tales having as little regard for humanity as humans have for insects.

There have been attempts at categorizing this fictional group of beings, and Phillip A. Schreffler argues that by carefully scrutinizing Lovecraft’s writings a workable framework emerges that outlines the entire “pantheon” – from the unreachable “Outer Ones” (e.g. Azathoth, who apparently occupies the centre of the universe) and “Great Old Ones” (e.g. Cthulhu, imprisoned on Earth in the sunken city of R’lyeh) to the lesser

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David E. Schultz, however, believes Lovecraft never meant to create a canonical Mythos but rather intended his imaginary pantheon to merely serve as a background element. Lovecraft himself humorously referred

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First stage

Second stage

Price’s dichotomy dictates the second stage commenced with August Derleth, the principal difference between Lovecraft and Derleth being the latter’s use of hope and that the Cthulhu mythos essentially represented a struggle between good and evil. Derleth is credited with creating the *Elder Gods*, and stated:

As Lovecraft conceived the deities or forces of his mythos, there were, initially, the Elder Gods... [T]hese Elder Gods were benign deities, representing the forces of good, and existed peacefully...very rarely stirring forth to intervene in the unceasing struggle between the powers of evil and the races of Earth. These powers of evil were variously known as the Great Old Ones or the Ancient Ones...
—August Derleth, “The Cthulhu Mythos”

Price suggests that the basis of Derleth’s systemization are found in Lovecraft, stating: “Was Derleth’s use of the rubric ‘Elder Gods’ so alien to Lovecraft’s in *At the Mountains of Madness*? Perhaps not. In fact, this very story, along with some hints from ‘The Shadow over Innsmouth’, provides the key to the origin of the ‘Derleth Mythos’. For in *At the Mountains of Madness* we find the history of a conflict between two interstellar races (among others): the Elder Ones and the Cthulhu-spawn.”

Derleth himself believed that Lovecraft wished for other authors to actively write about the myth-cycle as opposed to it being a discrete plot device. Derleth expanded the boundaries of the Mythos by including any passing reference to another author’s story elements by Lovecraft as part of the genre: just as Lovecraft made passing reference to Clark Ashton Smith’s *Book of Eibon*, Derleth in turn added Smith’s Ubbo-Sathla to the Mythos.

Derleth also attempted to connect the deities of the Mythos to the four elements (*air*, *earth*, *fire*, and *water*), but was forced to adopt artistic license and create beings to represent certain elements (*air* and *fire*) to legitimize his system of classification. In applying the elemental theory to beings that function on a cosmic scale (e.g. Yog-Sothoth) some authors created a separate category termed *aethyr*.

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“Lovecraft” mythos

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“Lovecraft” mythos

A lesser known term employed by the scholar S. T. Joshi to describe the works of Lovecraft. Joshi identified four key elements in Lovecraft’s mythos (that Price would later condense to three themes), being the fundamental principle of cosmicism (which once again highlighted the irrelevance of mankind), the imaginary New England setting, a pantheon of recurring “pseudomythological” entities and a collection of arcane books that supposedly yield insights into the mythology.

Using `position: sticky` on the `<dt>` elements in a `<dl>`

HTML

Tidy

```
1 <div>
2   <dl>
3     <dt>A</dt>
4     <dd>The Allman Brothers Band</dd>
5     <dd>The Animals</dd>
6   </dl>
7   <dl>
8     <dt>B</dt>
9     <dd>Badfinger</dd>
10    <dd>The Beatles</dd>
11    <dd>Big Star</dd>
12    <dd>Blind Faith</dd>
13    <dd>The Black Keys</dd>
14    <dd>The Blasters</dd>
15    <dd>Bob Dylan</dd>
16    <dd>The Brian Jonestown Massacre</dd>
17    <dd>Bruce Springsteen</dd>
18    <dd>The Byrds</dd>
19  </dl>
```

CSS

Tidy

View Compiled

```
1 dt {
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3   top: 0;
4 }
5
```

A
The Allman Brothers Band
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<dd>The Allman Brothers Band</dd>

5

<dd>The Animals</dd>

6

</dl>

7

<dl>

8

<dt>B</dt>

9

<dd>Badfinger</dd>

10

<dd>The Beatles</dd>

11

<dd>Big Star</dd>

12

<dd>Blind Faith</dd>

13

<dd>The Black Keys</dd>

14

<dd>The Blasters</dd>

15

<dd>Bob Dylan</dd>

16

<dd>The Brian Jonestown Massacre</dd>

17

<dd>Bruce Springsteen</dd>

18

<dd>The Byrds</dd>

19

</dl>

CSS

Tidy

View Compiled

1

dt {

2

position: sticky;

3

top: 0;

4

}

5

R
Radiohead
The Rascals
R.E.M.
The Replacements
Rod Stewart
The Rolling Stones
Roxy Music
Rush
S
Sam Cooke
The Smithereens
The Smiths

Types of positioned elements based on their computed position properties:

- » Positioned: `relative`, `absolute`, `fixed`, `sticky`
- » Relatively: `relative`
- » Absolutely: `absolute` or `fixed`
- » Stickily: `sticky`

Note that *absolutely positioned elements* are not the same as `position: absolute`!

position:					ios		
static	4	12	1	1	6.1	1	3?
relative	4	12	1	1	6.1	1	3?
absolute	4	12	1	1	6.1	1	3?
fixed	8	12	2	3.1	8	4	3
sticky	—	16‡	32* 59	7.1§ 13	8§ 13	56†	67‡

* Doesn't work with any `<table>` elements † Works with `<th>` only
 ‡ Works with `<th>`; not `<tr>/<thead>` § Requires `-webkit-`

Stacking

`z-index: <integer>`

Specifies the *z-order of an element* & its descendants

x-index is horizontal

y-index is vertical

z-index is the stacking order

When elements overlap, `z-index` determines which one covers the other

Elements with a higher `z-index <integer>` cover elements with lower ones

These are not popup windows, just boxes on the page

HTML

```

    tell him the way to Nir and Ulthar.
3 </p>
4 
5 
6 <p>
7   At noon he walked through the one
  broad high street of Nir, which he
  had once visited and which marked his

```

CSS

```

1 .derleth-sign {
2   position: absolute;
3   left: 170px;
4   top: 170px;
5   z-index: 10;
6 }
7
8 .lovecraft-sign {
9   position: absolute;
10  left: 100px;
11  top: 100px;
12 }

```

JS

Carter detoured at the proper place, and heard behind him the frightened fluttering of some of the more timid Zoogs. He had known they would follow him, so he was not disturbed; for one grows accustomed to the anomalies of these prying creatures. It was twilight when he came to the edge of the wood, and the strengthening glow told him it was the twilight of morning. Over fertile plains rolling down to the Skai he saw the smoke of cottage chimneys, and on every hand were the hedges and ploughed fields and thatched roofs of a peaceful country. He stopped at a farmhouse well for a cup of water, and all the dogs barked affrightedly at him as he passed that crept through the grass behind. At another house, where people were still sitting about the gods, and whether they danced often upon Lerion; but the farmer and the Elder Sign and tell him the way to Nir and Ulthar.

At noon he walked through the one broad high street of Nir, which he had once visited and which marked his farthest for the past. Afterward he came to the great stone bridge across the Skai, into whose construction a living human sacrifice when they built it thirteen hundred years ago. The frequent presence of cats (who all arched their backs at the trailing Zoogs) revealed a significant law, no man may enter the suburbs of Ulthar, with their little green cottages and neatly fenced lawns. Ulthar was the quaint town itself, with its old peaked roofs and overhanging upper stories, and narrow hill streets where one can see old cobblestones whenever the graceful cats afford space enough. Carter, the cats being somewhat dispersed by the half-seen Zoogs, picked his way directly to the modest Temple of the Elder Ones where the priests and old records were said to be; and once within that venerable circular tower of ivied stone—which crowns Ulthar's highest hill—he sought out the patriarch Atal, who had been up the forbidden peak Hatheg-Kia in the stony desert and had come down again alive.

Atal, seated on an ivory dais in a festooned shrine at the top of the temple, was fully three centuries old; but still very keen of mind and memory. From him Carter learned many things about the gods, but mainly that they are indeed only Earth's gods, ruling feebly our own dreamland and having no power or habitation elsewhere. They might, Atal said, heed a man's prayer if in good humour; but one must not think of climbing to their onyx stronghold atop Kadath in the cold waste. It was lucky that no man knew where Kadath towers, for the fruits of ascending it would be very grave. Atal's companion Banni the Wise had been drawn screaming into the sky for climbing merely the known peak of Hatheg-Kia. With unknown Kadath, if ever found, matters would be much worse; for although Earth's gods may sometimes be surpassed by a wise mortal, they are protected by the Other Gods from Outside, whom it is better not to discuss. At least twice in the world's history the Other Gods set their seal upon Earth's primal granite; once in antediluvian times, as guessed from a drawing in those parts of the Pnakotic Manuscripts too ancient to be read, and once on Hatheg-Kia when Barzai the Wise tried to see Earth's gods dancing by moonlight. So, Atal said, it would be much better to let all gods alone except in tactful prayers.

				ios		
z-index	4	1	1	Y	1	4
Negative values	4	3	1	Y	1	4

Writing Mode & Direction

writing-mode

Specifies two things:

- » the orientation of lines of text: vertical or horizontal
- » the direction you progress from one line of text to the next: top-to-bottom, left-to-right, or right-to-left

Values for `writing-mode`:

- » `horizontal-tb`: horizontal & top-to-bottom, as in English, Arabic, Hebrew, or Korean
- » `vertical-rl`: vertical & right-to-left, as in Japanese, Chinese, or traditional Korean
- » `vertical-lr`: vertical & left-to-right, as in Mongolian

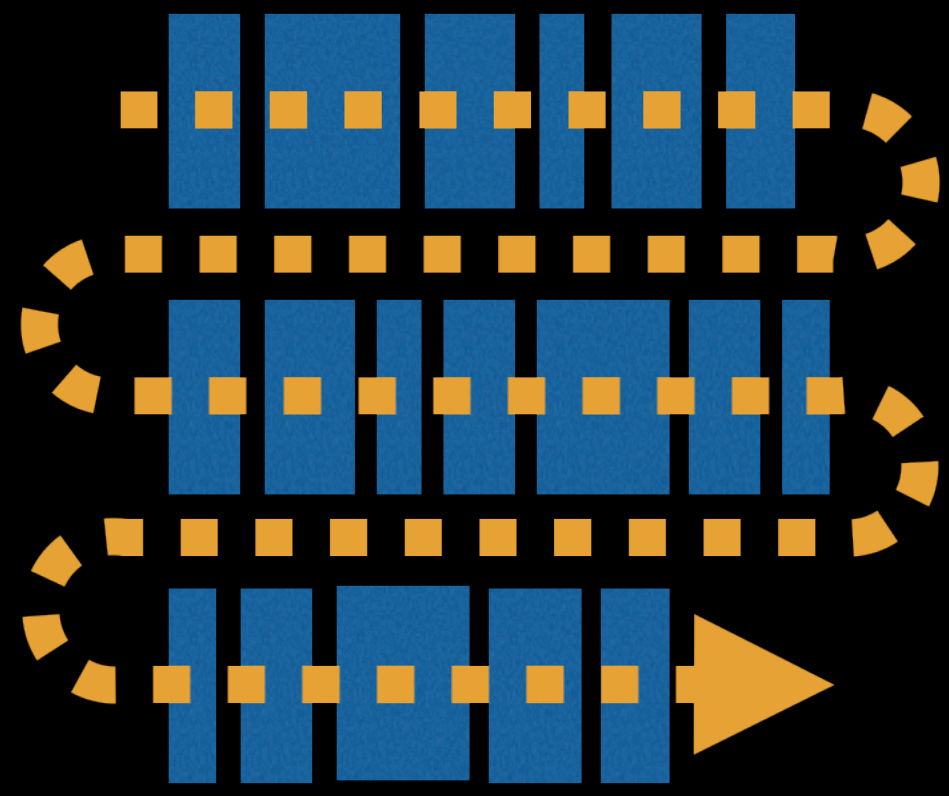
direction

Specifies the direction in which readers progress from one word to the next

Values:

- » **ltr**: left-to-right, as in English, Spanish, or Russian
- » **rtl**: right-to-left, as in Arabic or Hebrew

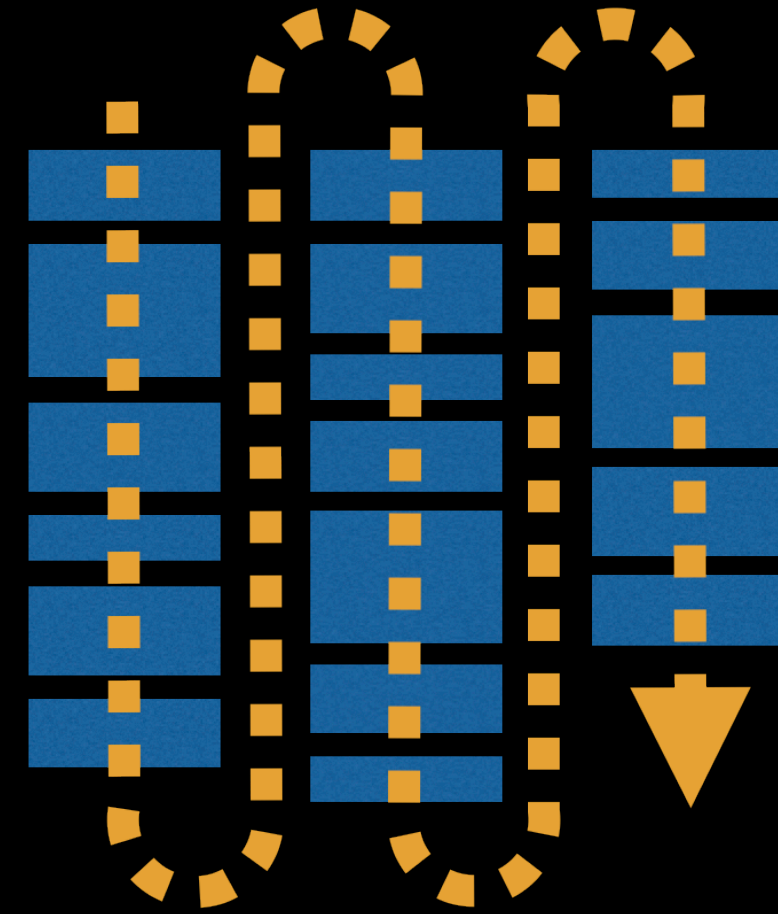
Latin- & Han-based



writing-mode:
horizontal-tb;

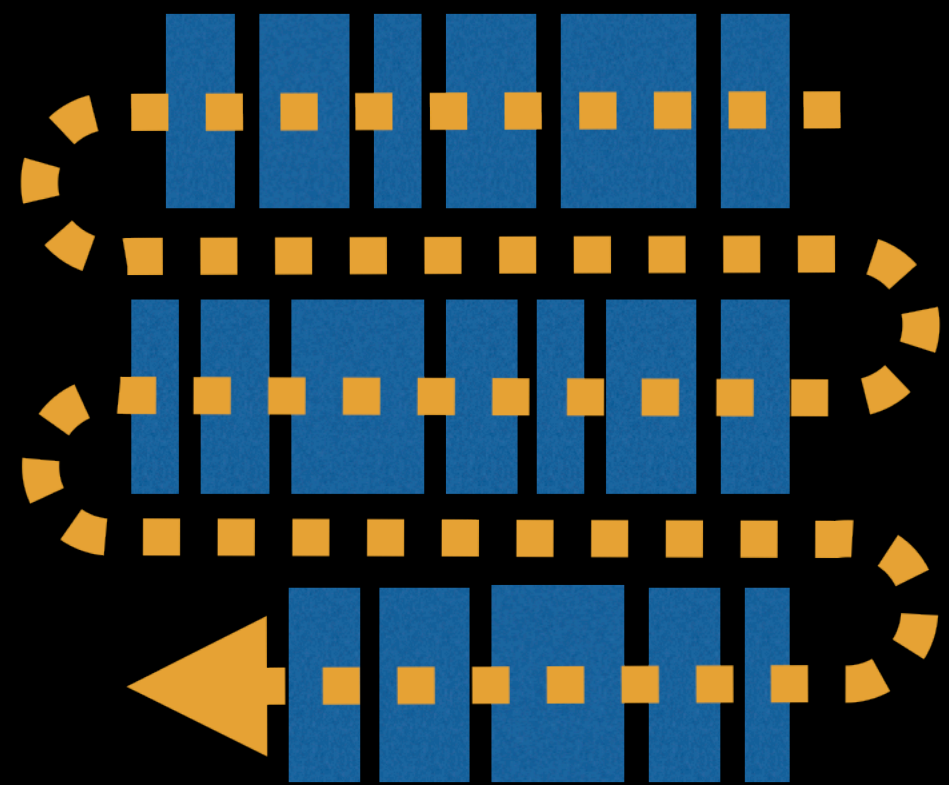
direction: ltr;

Mongolian-based



writing-mode:
vertical-lr;

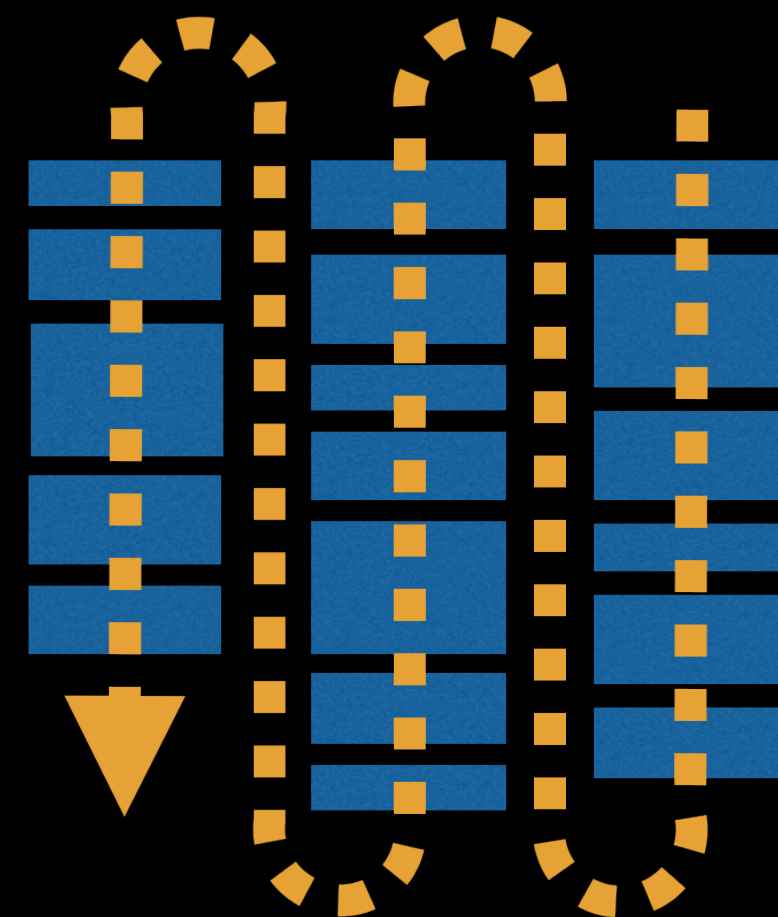
Arabic-based



writing-mode:
horizontal-tb;

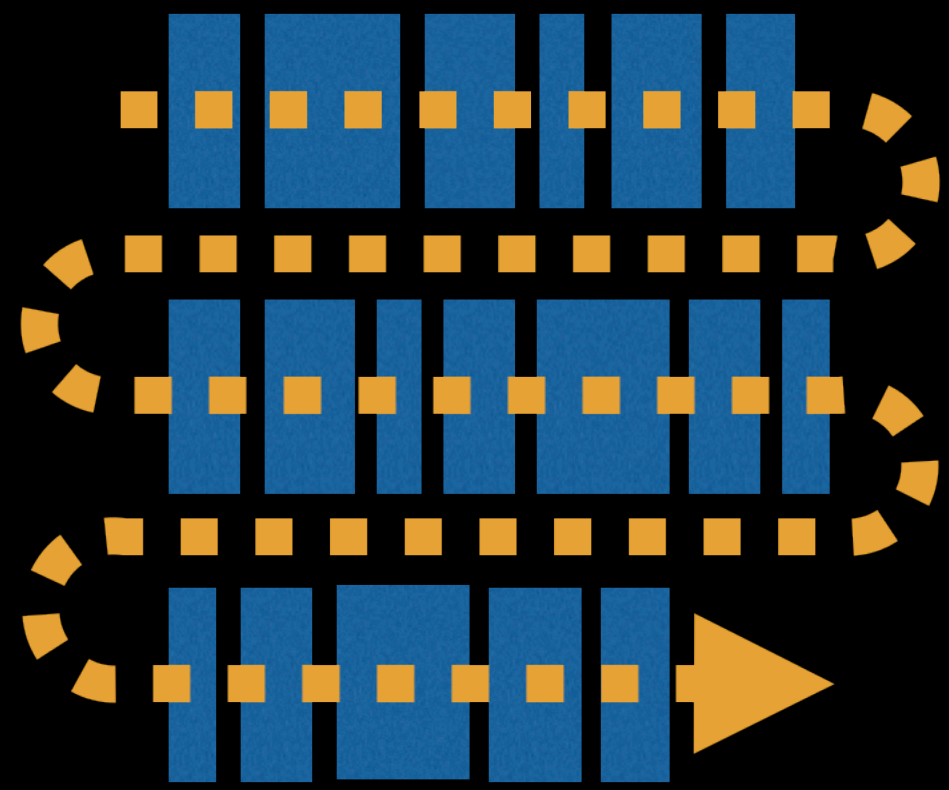
direction: rtl;

Han-based



writing-mode:
vertical-rl

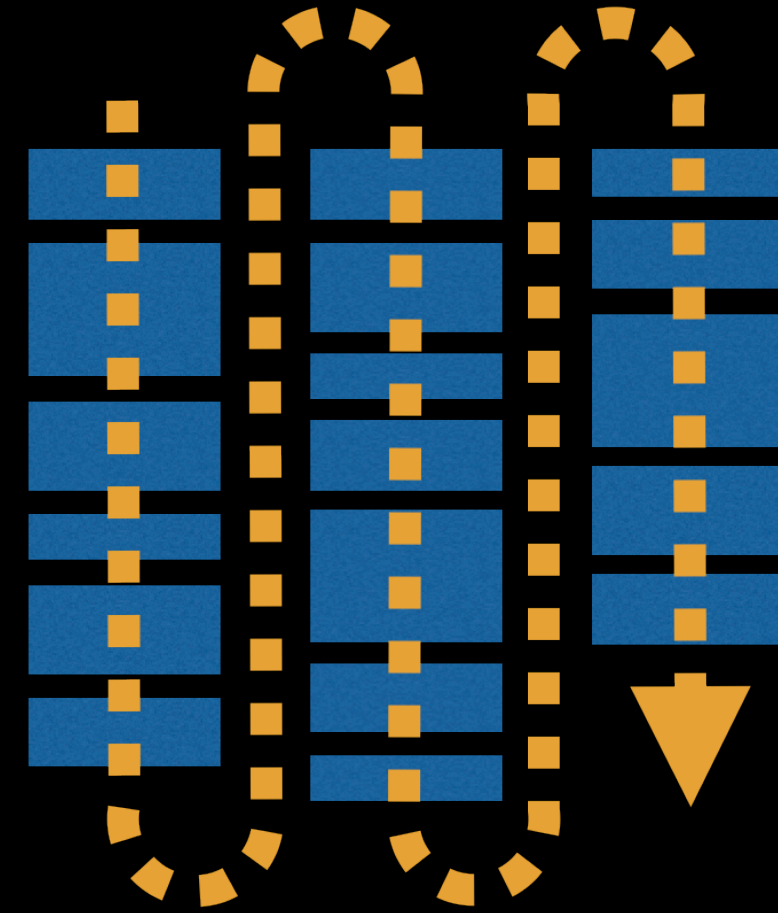
Latin- & Han-based



Start edges: top & left

End edges: bottom & right

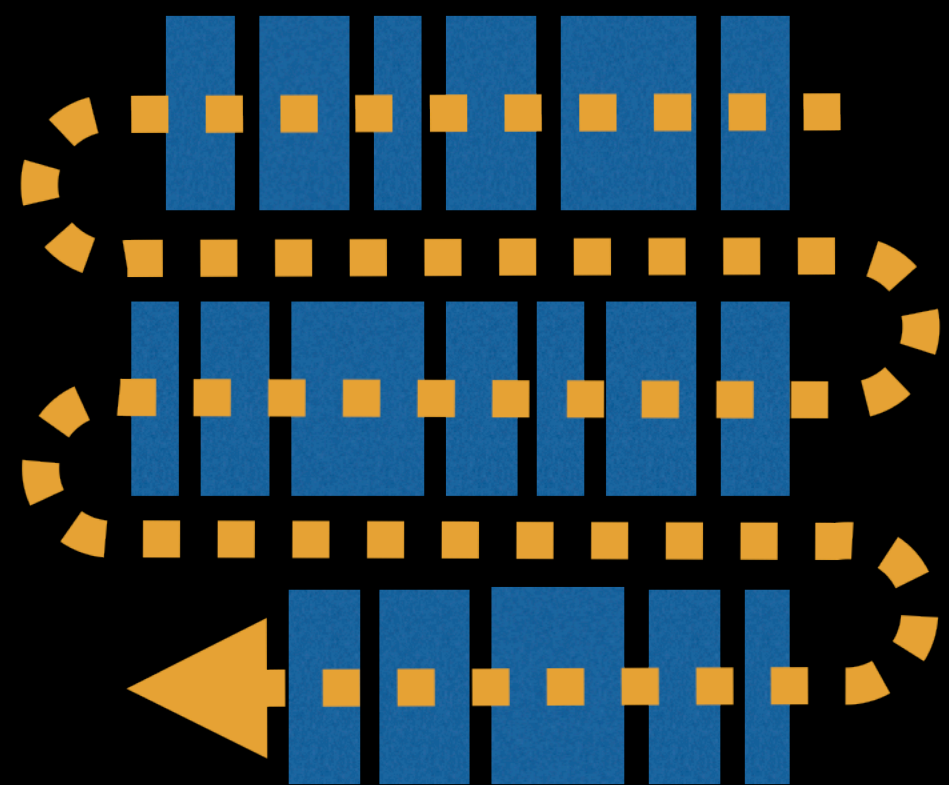
Mongolian-based



Start edges: top & left

End edges: bottom & right

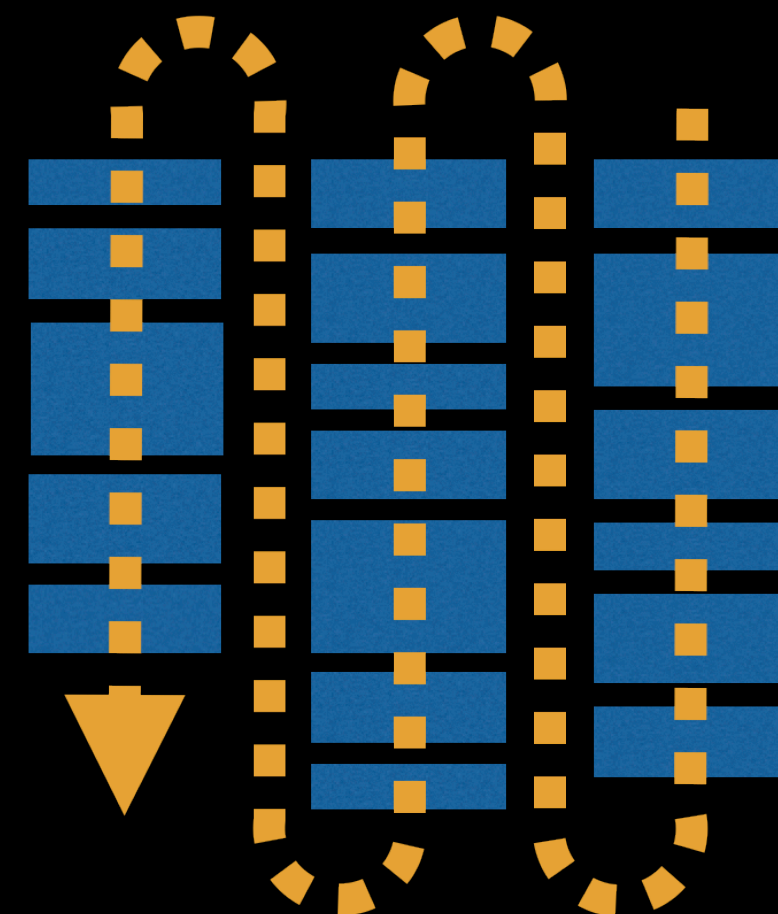
Arabic-based



Start edges: top & right

End edges: bottom & left

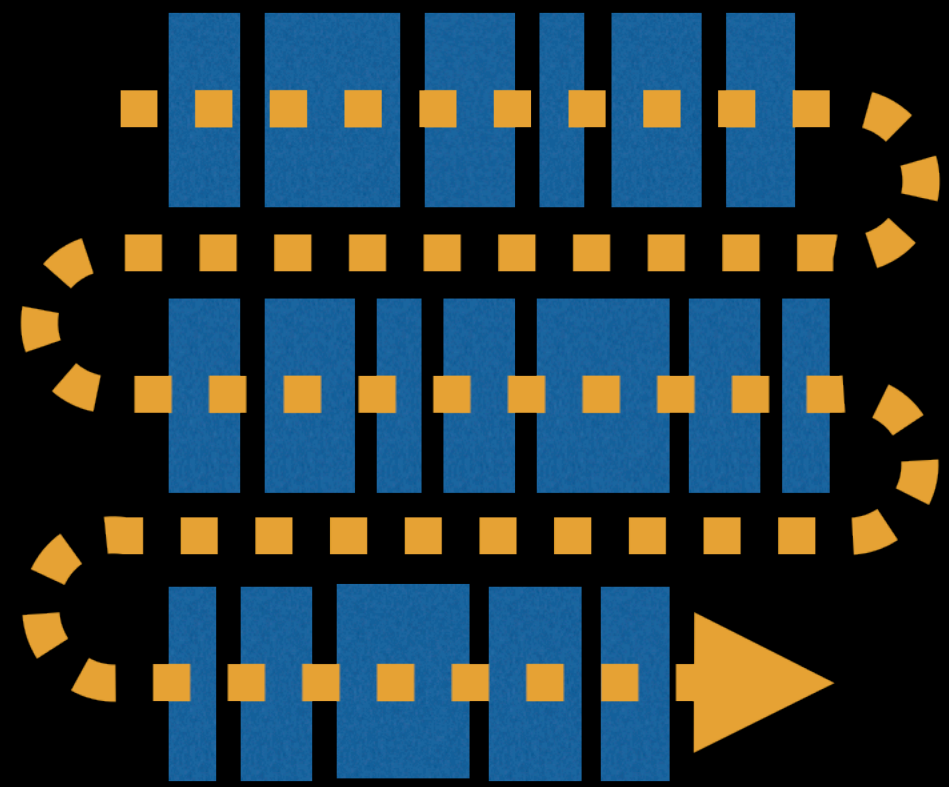
Han-based



Start edges: top & right

End edges: bottom & left

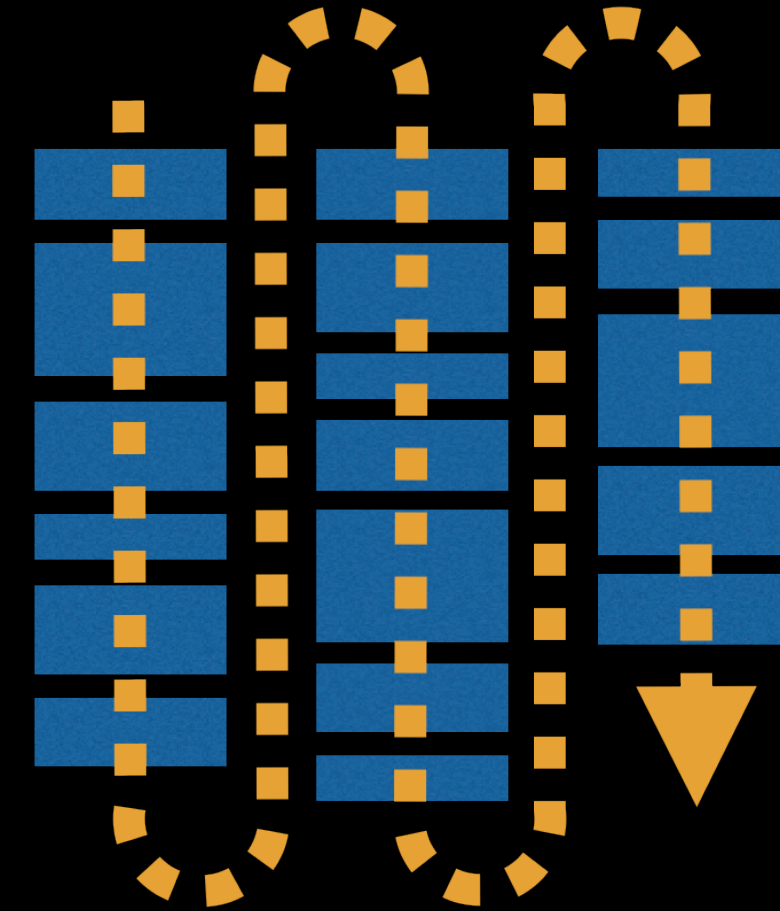
Latin- & Han-based



Block axis: vertical

Inline axis:
horizontal

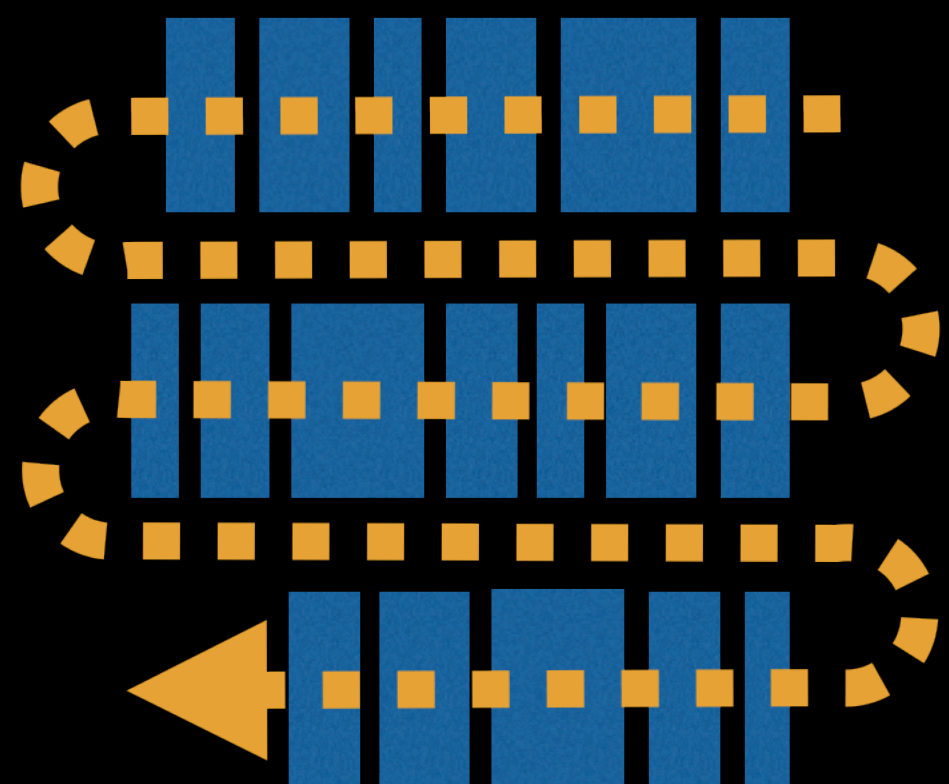
Mongolian-based



Block axis:
horizontal

Inline axis: vertical

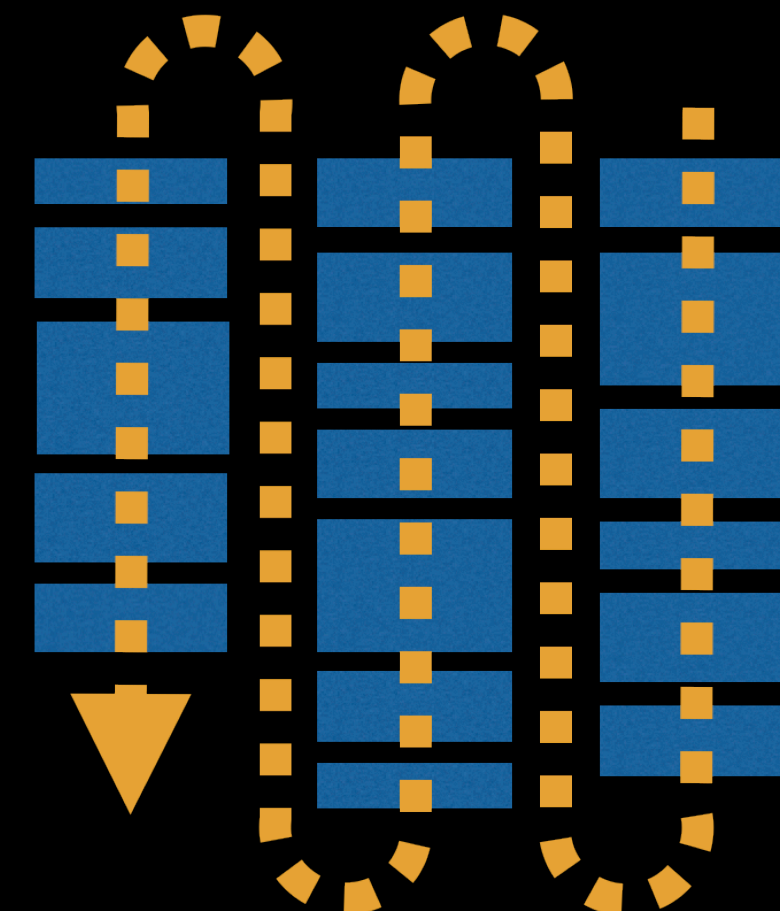
Arabic-based



Block axis: vertical

Inline axis:
horizontal

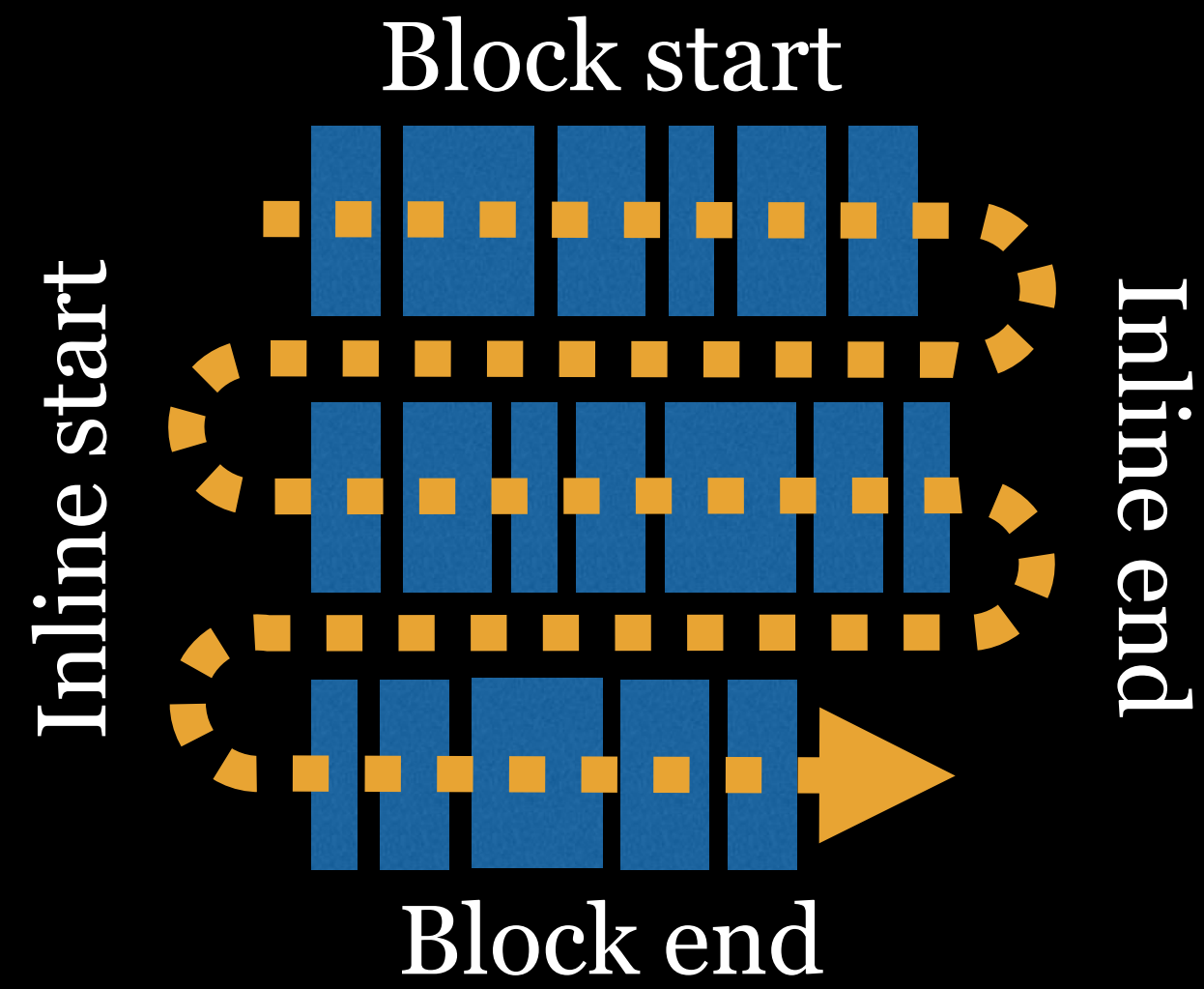
Han-based



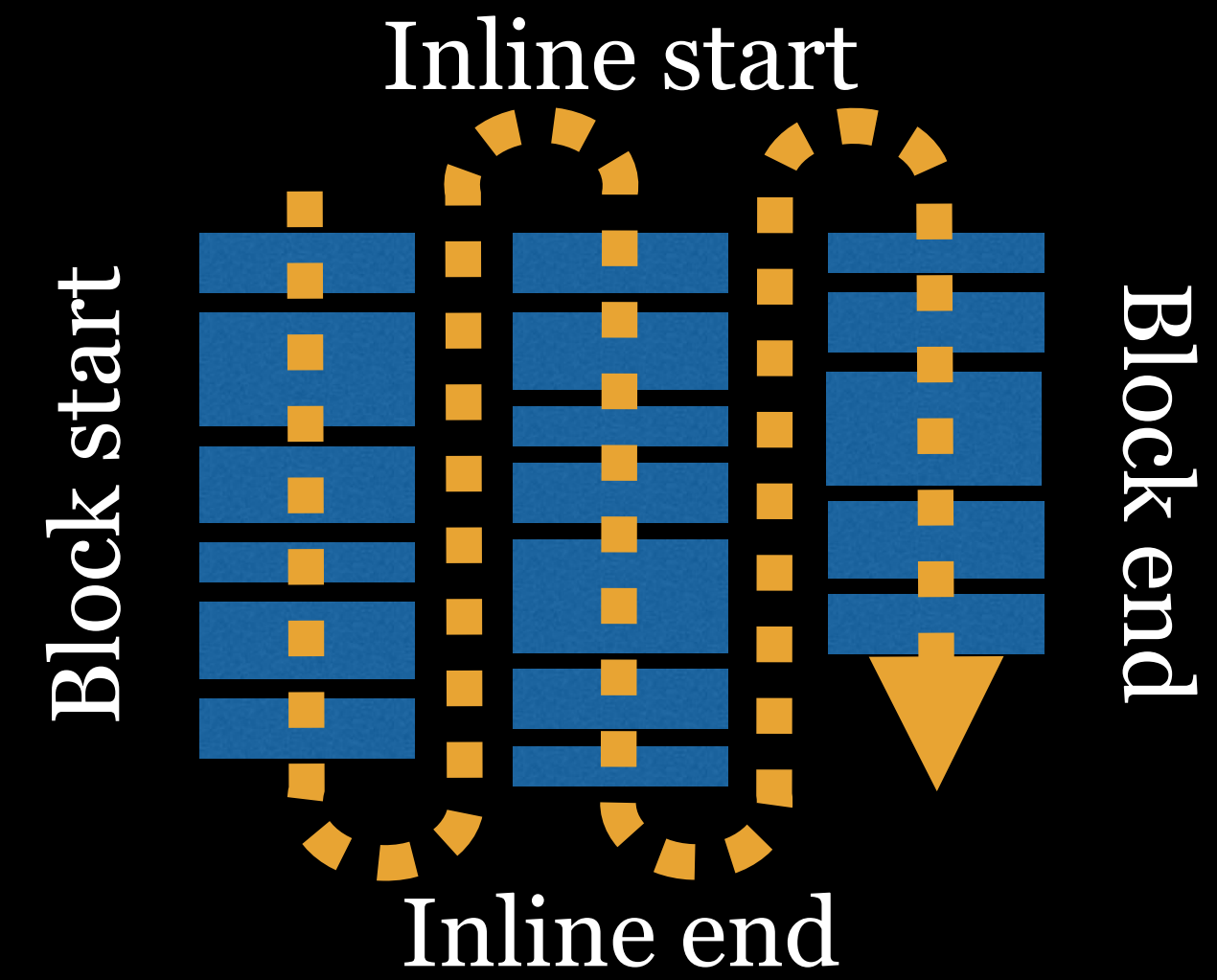
Block axis:
horizontal

Inline axis: vertical

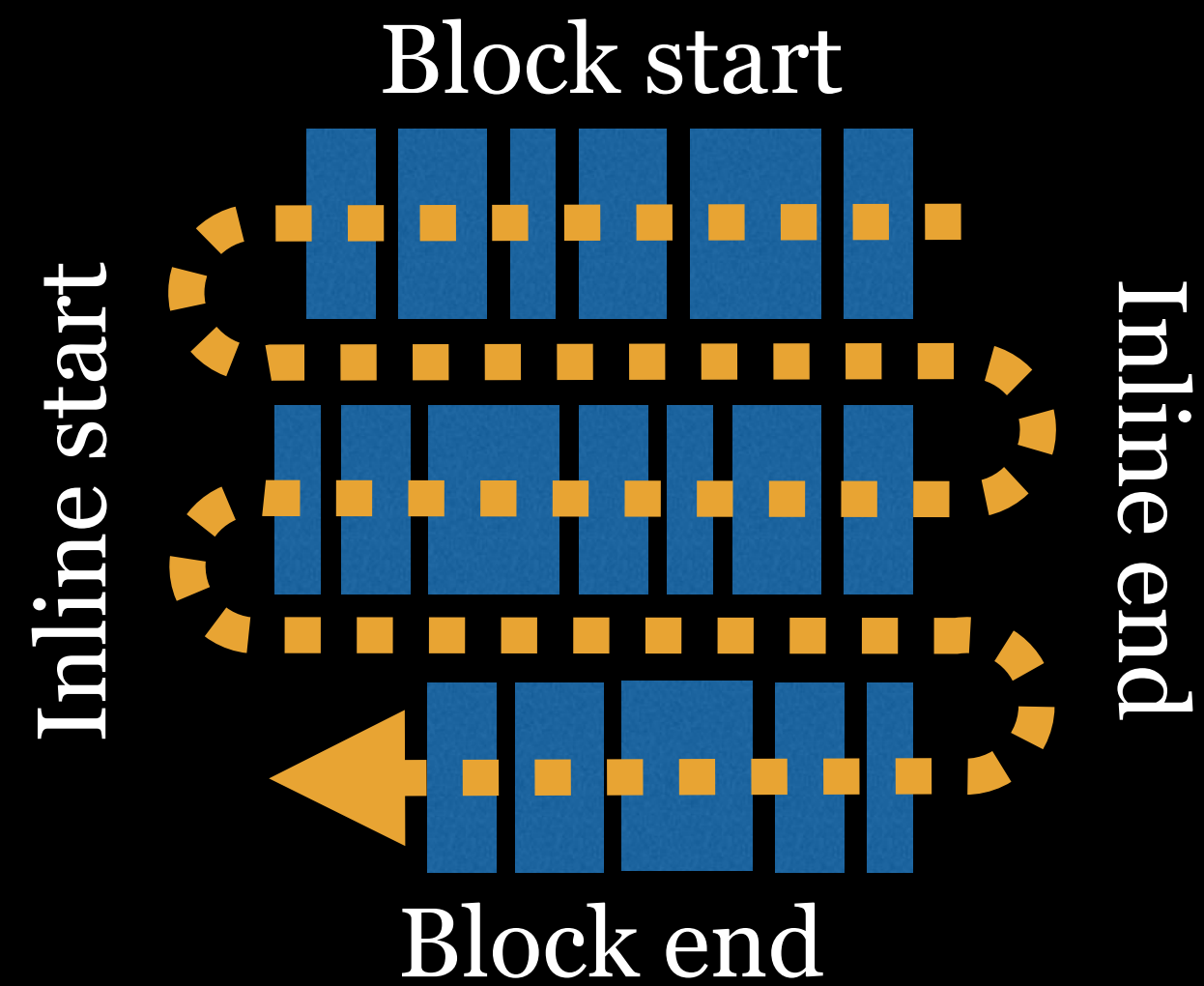
Latin- & Han-based



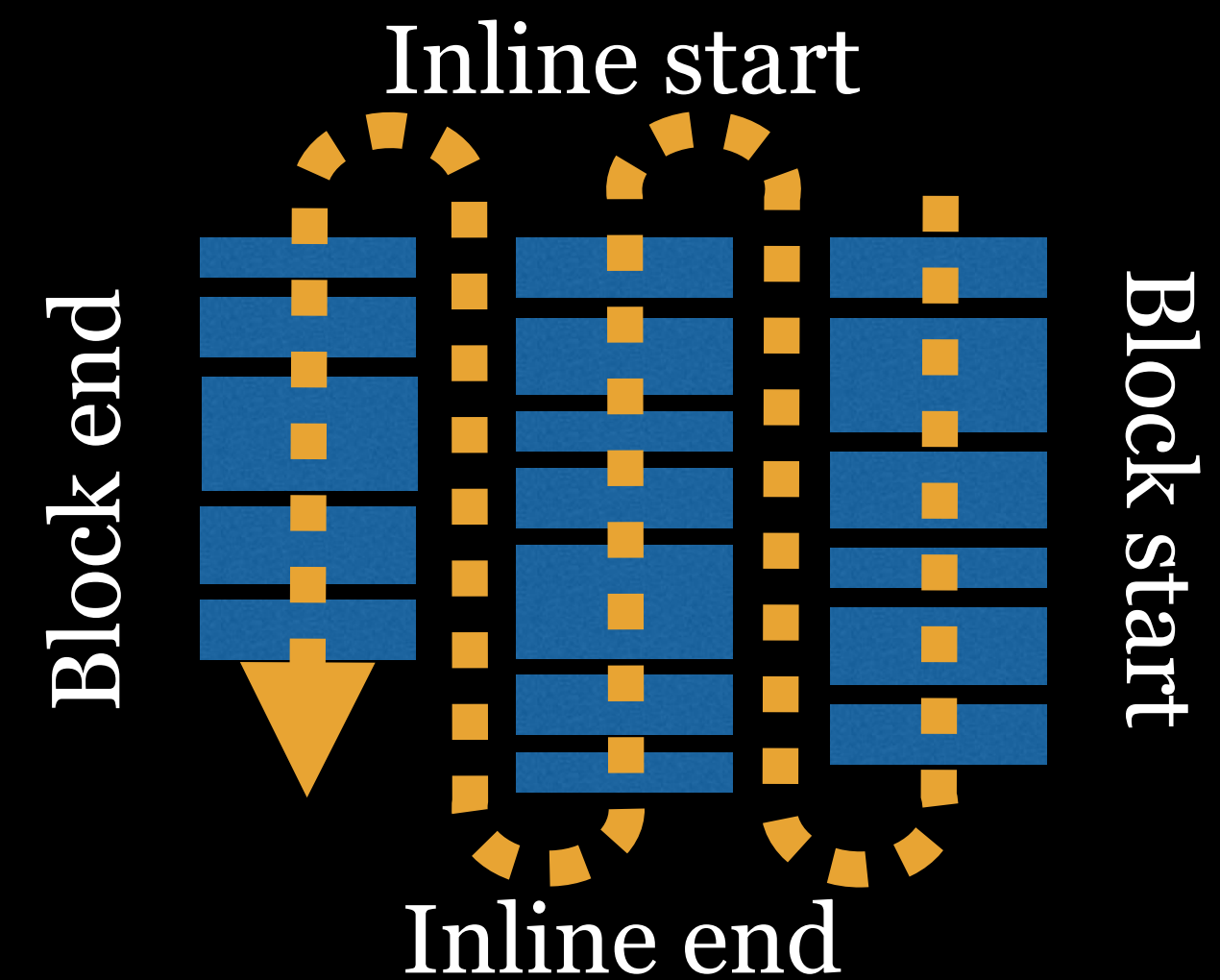
Mongolian-based



Arabic-based



Han-based



For a long time, Web developers have defined layout based on *physical* directions that are *relative to the webpage, independent of writing mode*: top, bottom, left, & right

This becomes problematic when you're switching between languages that have different writing modes & directions



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Bing

תכונות חיפוש חכמות מאפשרות לך למצוא את מה שאתה צריך במהירות ובקלות – תשובות, חדשות, בידור ועוד.

[למידע נוסף <](#)



Microsoft Edge

הדרך המהירה ביותר לבצע דברים באינטרנט עם תכונות מוכללות שעוזרות לך להישאר מאורגן, לחקור ולגלות.

[למידע נוסף <](#)



Skype

יכולות הטקסט, הקול והווידאו של Skype מקלות עליך להתקרב לאנשים החשובים לך ביותר בכל המכשירים שלך.

[למידע נוסף <](#)



Outlook

דואר אלקטרוני ולוח שנה ביחד. כל מה שאתה צריך כדי להישאר פרודוקטיבי ומחובר – בבית, בנסיעות ובכל מקום שביניהם.

[למידע נוסף <](#)



Windows

חפש, נעל או מחק מכשיר Windows 10 שעבד או נגנב, קבע מועד לתיקון וקבל תמיכה.

[למידע נוסף <](#)



OneDrive

אחסן בבטחה את הקבצים והתמונות שלך וקבל אליהם גישה בכל המכשירים. חשבון Microsoft שלך מגיע עם נפח אחסון של 5GB, ובעת הצורך ניתן להוסיף נפח נוסף.

[למידע נוסף <](#)



Office

השג את מה שחשוב לך באמצעות Word, Excel, PowerPoint ועוד. מה תעשה עם 365 הבא?

[למידע נוסף <](#)



Xbox

שחק במשחקים האהובים עליך ביותר מקומות מבעבר. גש בקלות למשחקים, לחברים ולקהילה שלך באמצעות Xbox One, מחשבי Windows 10 ומכשירים ניידים.

[למידע נוסף <](#)

The W3C is in providing the capability for developers to control layout through *logical*, instead of physical, directions

That will allow you to change the language on a website without needing you to completely change your HTML & CSS

You're not longer used fixed directions; instead, you'll use language-relative directions

All the logical properties as of July 2020:

block-size • inline-size • max-block-size • max-inline-size • min-block-size • min-inline-size • padding-block • padding-block-end • padding-block-start • padding-inline • padding-inline-end • padding-inline-start • border-block • border-block-color • border-block-end • border-block-end-color • border-block-end-style • border-block-end-width • border-block-start • border-block-start-color • border-block-start-style • border-block-start-width • border-block-style • border-block-width • border-end-end-radius • border-end-start-radius • border-inline • border-inline-color • border-inline-end • border-inline-end-color • border-inline-end-style • border-inline-end-width • border-inline-start • border-inline-start-color • border-inline-start-style • border-inline-start-width • border-inline-style • border-inline-width • border-start-end-radius • border-start-start-radius • margin-block • margin-block-end • margin-block-start • margin-inline • margin-inline-end • margin-inline-start • overflow-block • overflow-inline • inset • inset-block • inset-block-end • inset-block-start • inset-inline • inset-inline-end • inset-inline-start • scroll-padding-block • scroll-padding-block-end • scroll-padding-block-start • scroll-padding-inline • scroll-padding-inline-end • scroll-padding-inline-start • scroll-margin-block • scroll-margin-block-end • scroll-margin-block-start • scroll-margin-inline • scroll-margin-inline-end • scroll-margin-inline-start

To sum up, these are the things you can control with logical properties:

- » box model: size, padding, border, margin, overflow
- » positioning: inset
- » scrollsnap: scroll-padding & scroll-margin

There are also *many* logical values as well!

Box Alignment

CSS development over the last several years has increasingly focused on unifying the features & keywords that relate to the alignment of boxes in the various CSS box layout models:

- » block layout
- » multi-column layout
- » flex layout
- » grid layout

Browsers don't fully support everything... yet

- » block layout: unsupported
- » multi-column layout: partially supported
- » flex layout: fully supported
- » grid layout fully supported

There are significant differences in box alignment
between those 4 box layout models

We will cover those differences as we get to each model

3 types of alignment:

1. *Positional* specifies the position of aligned boxes with relation to their container, e.g., `start`, `end`, `center`
2. *Baseline* focuses on lining text up along the same baseline no matter how big the text is, e.g., `baseline`
3. *Distributed* focuses on distributing space among aligned boxes, e.g., `space-around`, `space-between`, `stretch`

Positional

Dunwich Horror

Cthulhu

Azathoth

Distributed

Dunwich Horror

Cthulhu

Azathoth

Baseline

Dunwich Horror

Cthulhu

Azathoth

Normally with Baseline you would not show box backgrounds because the focus is on the text

2 axes define the orientation of the layout:

1. *inline* is horizontal \leftrightarrow
2. *block* is vertical \updownarrow

These axes are reversed on pages using languages like Japanese or Chinese

Multi-Column Layout

column-count
column-width
columns

column-gap

column-span

column-fill

column-rule-color
column-rule-style
column-rule-width
column-rule

(page-)break-after

(page-)break-before

(page-)break-inside

widows

orphans

- Experience creating various small website projects.
- An awareness of the process in creating a website & the various roles needed in that process.

Mini-Topics ↩

During most classes I will take a few minutes & discuss a mini-topic for 10 minutes or so. Some of these mini-topics include:

- Snippets
- Offline documentation
- Regular Expressions (RegEx)
- Simplenote
- OpenDNS
- Backing up
- Password safes
- RSS
- The best help sites
- Ebooks
- Markdown
- Wolfram Alpha
- Cookies
- LAMP (& WAMP & MAMP)
- Git & GitHub
- Portable Apps
- Encoding email addresses
- SEO
- Finding multimedia
- AJAX
- Formatting & beautifying code
- Minimizing code
- WYSIWYG Web tools
- Automating my Mac
- Programming fonts
- Using Word to make webpages
- Pattern libraries
- The WebSanity Toolkit
- jQuery

Requirements ↩

Texts ↩

There are no required books. Readings will consist of articles, analyses, & ephemera from the Internet. Virtually everything you need can be accessed via my website; however, when it's appropriate I will recommend books useful for further study & reference.

OK, if you just have to kill a tree, I highly recommend Jon Duckett's [HTML & CSS: Design and Build Websites](#). But it's not *required*.

Tasks ↩

`column-width`

Specifies *hint* to the browser of the *optimal width of the columns*, as actual width may be wider or narrower, depending upon container width

If the container's width is narrower than `column-width`, you will have 1 column, which is smaller than `column-width`

Values for `column-width`

- » `<length>`: positive values only
- » `auto`: width of the column determined by `column-count` & other CSS properties (default)

`column-count`

Specifies *number of columns* for content

If `column-width` is set, `column-count` specifies the *maximum* number of columns (& you should always set `column-width`!)

`columns`

Shorthand for `column-width` & `column-count`

You always want to use `column-width` & `column-count` together, so using the `columns` shorthand makes things shorter & easier

`column-gap`

Specifies *size of the gap (gutter) between columns*

Note: `gap` is available to use, but it doesn't make sense to use, as it's shorthand for `column-gap` & `row-gap`, & `row-gap` doesn't work with multi-column layout

`column-rule`

Shorthand to *set width, style, & color of a line drawn between columns*

`column-rule-color` value is `<color>`

`column-rule-style` value is same as `<border-style>`
earlier; e.g., `none`, `dotted`, `solid`, & so on

`column-rule-width` value is `<length>` or `thin`, `medium`,
or `thick`

HTML

1

<h1>Metasyntactic Variables</h1>

2

<div>

3

4

foo

5

bar

6

baz

7

qux

8

quux

9

corge

10

grault

11

garply

12

waldo

13

fred

14

plugh

15

xyzzy

16

thud

17

mos

18

henk

19

def

CSS

1

ol {

2

column-count: 4;

3

column-width: 150px;

4

column-gap: 5rem;

5

column-rule: 2px dotted gray;

6

}

JS

Metasyntactic Variables

- | | | |
|----------|-----------|----------|
| 1. foo | 7. grault | 13. thud |
| 2. bar | 8. garply | 14. mos |
| 3. baz | 9. waldo | 15. henk |
| 4. qux | 10. fred | 16. def |
| 5. quux | 11. plugh | |
| 6. corge | 12. xyzzy | |

HTML

1<div><ul class="multi-column">

2<div>Abhoth

3<div>Aiueb Gnshal

4<div>Aletheia

5<div>Azathoth

6<div>Azhorra-Tha

7<div>B'gnu-Thun

8<div>Bokrug

9<div>C'thalpa

10<div>Cthulhu

11<div>Cxaxukluth

12<div>D'endrrah

13<div>Dagon

14<div>Daoloth

15<div>Darkness

16<div>Deep One

17<div>Dunwich Horror

CSS (SCSS) Compiled

1<div>.multi-column {

2<div>column-count: 4;

3<div>column-width: 170px;

4<div>column-gap: 40px;

5<div>column-rule-color: silver;

6<div>column-rule-style: solid;

7<div>column-rule-width: 2px;

8<div>}

JS

Abhoth	Gnoph-Keh	Oryx	Tsathoggua
Aiueb Gnshal	Hound of Tindalos	Oztalun	Tulzscha
Aletheia	Hunting Horror	Rhan-Tegoth	Ubbo-Sathla
Azathoth	Ialdagorth	Shabbith-Ka	Ulthar
Azhorra-Tha	Kaajh'Kaalbh	Shaggai	Uvhash
B'gnu-Thun	Kthanid	Shathak	Vorvadoss
Bokrug	Lu-Kthu	Shavalyoth	Xa'ligha
C'thalpa	Mh'ithrha	Shoggoth	Xexanoth
Cthulhu	Mi-go	Shub-Niggurath	Yad-Thaddag
Cxaxukluth	Mlandoth and Mril Thorion	Spider of Leng	Yaggdytha
D'endrrah	Mother Hydra	Star Mother	Ycnàgnnisssz
Dagon	Mother of Pus	Suc'Naath	Yhoundeh
Daoloth	Ngyr-Korath	The Blackness from the Stars	Yibb-Tstll
Darkness	Nightgaunt	The Cloud-Thing	Yidhra
Deep One	Nodens	The Hydra	Yig
Dunwich Horror			Yog Sothoth

Container no longer
wide enough to
handle 4 columns at
least 170px wide —
container is now less
than $4 \times 170\text{px}$
(**column-width**) +
 $3 \times 40\text{px}$ (**gap**)

Abhoth

Aiueb Gnshal

Aletheia

Azathoth

Azhorra-Tha

B'gnu-Thun

Bokrug

C'thalpa

Cthulhu

Cxaxukluth

D'endrrah

Dagon

Daoloth

Darkness

Deep One

Dunwich Horror

Lu-Kthu

Mh'ithrha

Mi-go

Mlandoth and Mril
Thorion

Mother Hydra

Mother of Pus

Ngyr-Korath

Nightgaunt

Nodens

Ny-Rakath

Nyarlathept

Nyctelios

Olkoth

Oryx

Oztaun

The Blackness from the
Stars

The Cloud-Thing

The Hydra

The Nameless Mist

Thunn'ha

Tru'nembra

Tsathoggua

Tulzscha

Ubbo-Sathla

Ulthar

Uvhash

Vorvados

Xa'ligha

Xexanoth

Yad-Thaddag

```
.multi-column {  
  column-count: 4;  
  column-width: 170px;  
  column-gap: 40px;  
  column-rule-color: silver;  
  column-rule-style: solid;  
  column-rule-width: 2px;  
}
```


HTML

1<div class="multi-column">
2Abhoth
3Aiueb Gnshal
4Aletheia
5Azathoth
6Azhorra-Tha
7B'gnu-Thun
8Bokrug
9C'thalpa
10Cthulhu
11Cxaxukluth
12Dagon
13Daoloth
14Darkness
15Deep One
16Dunwich Horror
17</div>

Container no longer wide
enough to handle 3 columns at
least 170px wide — container is
now less than 3×170px
(column-width) + 2×40px
(gap)

CSS (SCSS) Compiled

1.multi-column {
2column-count: 4;
3column-width: 170px;
4column-gap: 40px;
5column-rule-color: silver;
6column-rule-style: solid;
7column-rule-width: 2px;
8}

JS

Abhoth	Oryx
Aiueb Gnshal	Oztalun
Aletheia	Rhan-Tegoth
Azathoth	Shabbith-Ka
Azhorra-Tha	Shaggai
B'gnu-Thun	Shathak
Bokrug	Shavalyoth
C'thalpa	Shoggoth
Cthulhu	Shub-Niggurath
Cxaxukluth	Spider of Leng
D'endrrah	Star Mother
Dagon	Suc'Naath
Daoloth	The Blackness from the Stars
Darkness	The Cloud-Thing
Deep One	The Hydra
Dunwich Horror	

HTML

```
1 <ul class="multi-column">
2   <li>Abhoth</li>
3   <li>Aiueb Gnshal</li>
4   <li>Aletheia</li>
5   <li>Azathoth</li>
6   <li>B'gnu-Thun</li>
7   <li>C'thalpa</li>
8   <li>Cxaxukluth</li>
9   <li>D'endrrah</li>
10  <li>Dagon</li>
11  <li>Daoloth</li>
12  <li>Darkness</li>
13  <li>Deep One</li>
14  <li>Dunwich Horror</li>
```

Container no longer wide enough to handle 2 columns at least 170px wide — container is now less than $2 \times 170\text{px}$ (column-width) + 40px (gap)

CSS (SCSS) Compiled

```
1 .multi-column {
2   column-count: 4;
3   column-width: 170px;
4   column-gap: 40px;
5   column-rule-color: silver;
6   column-rule-style: solid;
7   column-rule-width: 2px;
8 }
```

JS

- Abhoth
- Aiueb Gnshal
- Aletheia
- Azathoth
- Azhorra-Tha
- B'gnu-Thun
- Bokrug
- C'thalpa
- Cthulhu
- Cxaxukluth
- D'endrrah
- Dagon
- Daoloth
- Darkness
- Deep One
- Dunwich Horror

column-span

Allows an element to *span across all columns*, e.g.,
<h2>

Values:

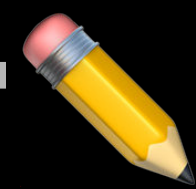
- » **all**: spans all columns
- » **none**: does not span all columns (default)

`column-fill`

Specifies whether *content is equally divided* across multiple columns

Values:

- » `auto`: Content *is not* equally divided across columns
- » `balance`: Content *is* equally divided among columns (default)



SIDE NOTE

When printing, **balance** acts different & a new property can be used

- » **balance**: When printing, only last page is equally divided
- » **balance-all**: When printing, all pages are equally divided


```
1 <div class="multi-column">
2   <h1>H.P. Lovecraft Short Story
  Excerpts</h1>
3   <h2><cite>The Shadow Out of
  Time</cite> (1936)</h2>
4   <p>Such was the background of
  intertwined legend and
  hallucination. When, around 1920, I
  had my researches in coherent shape,
  I felt a slight lessening of the
  tension which their earlier stages
  had increased. After all, and in
  spite of the fancies prompted by
```

```
1 .multi-column {
2   columns: 250px 2;
3   column-gap: 2em;
4   column-fill: balance;
5 }
6 .multi-column h1, .multi-column h2 {
7   column-span: all;
8 }
9 .multi-column p {
10  margin: 0;
11  text-indent: 1.5em;
12 }
```


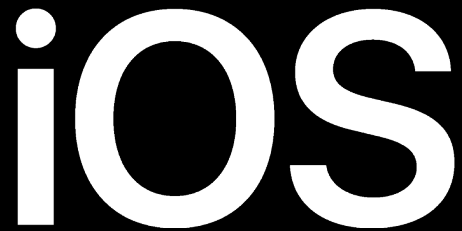


H.P. Lovecraft Short Story Excerpts

The Shadow Out of Time (1936)

Such was the background of intertwined legend and hallucination. When, around 1920, I had my researches in coherent shape, I felt a slight lessening of the tension which their earlier stages had increased. After all, and in spite of the fancies prompted by blind emotions, were not most of my phenomena readily explainable? Any chance might have turned my mind to dark studies during

dreams and disturbed feelings which came after the return of memory.

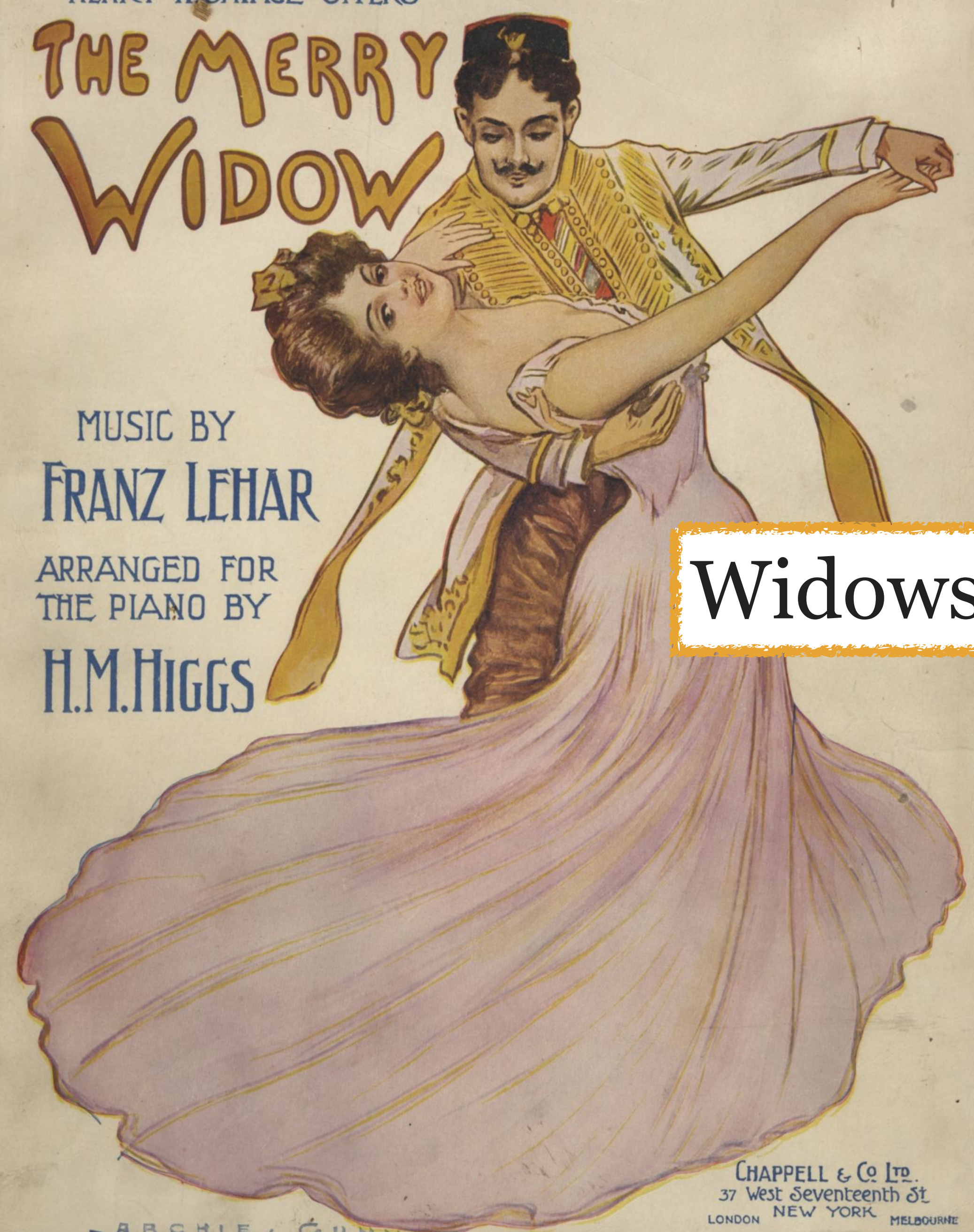
As for the marginal notes in dream-hieroglyphs and languages unknown to me, but laid at my door by librarians—I might easily have picked up a smattering of the tongues during my secondary state, while the hieroglyphs were doubtless coined by my fancy from descriptions in old legends, and afterward woven into my

							
column-width	10	12	50	9	9	50	Y
column-count	10	12	52	9	9	50	Y
columns	10	12	52	9	9	50	Y
column-gap	10	12	52	10	10	50	Y
column-rule	10	12	52	9	9	50	Y
column-span	10	12	71	9	9	50	Y
column-fill	10	12	52	9	9	50	Y

Edith McD. Chamberlain
March - 1908

HENRY W. SAVAGE OFFERS
**THE MERRY
WIDOW**

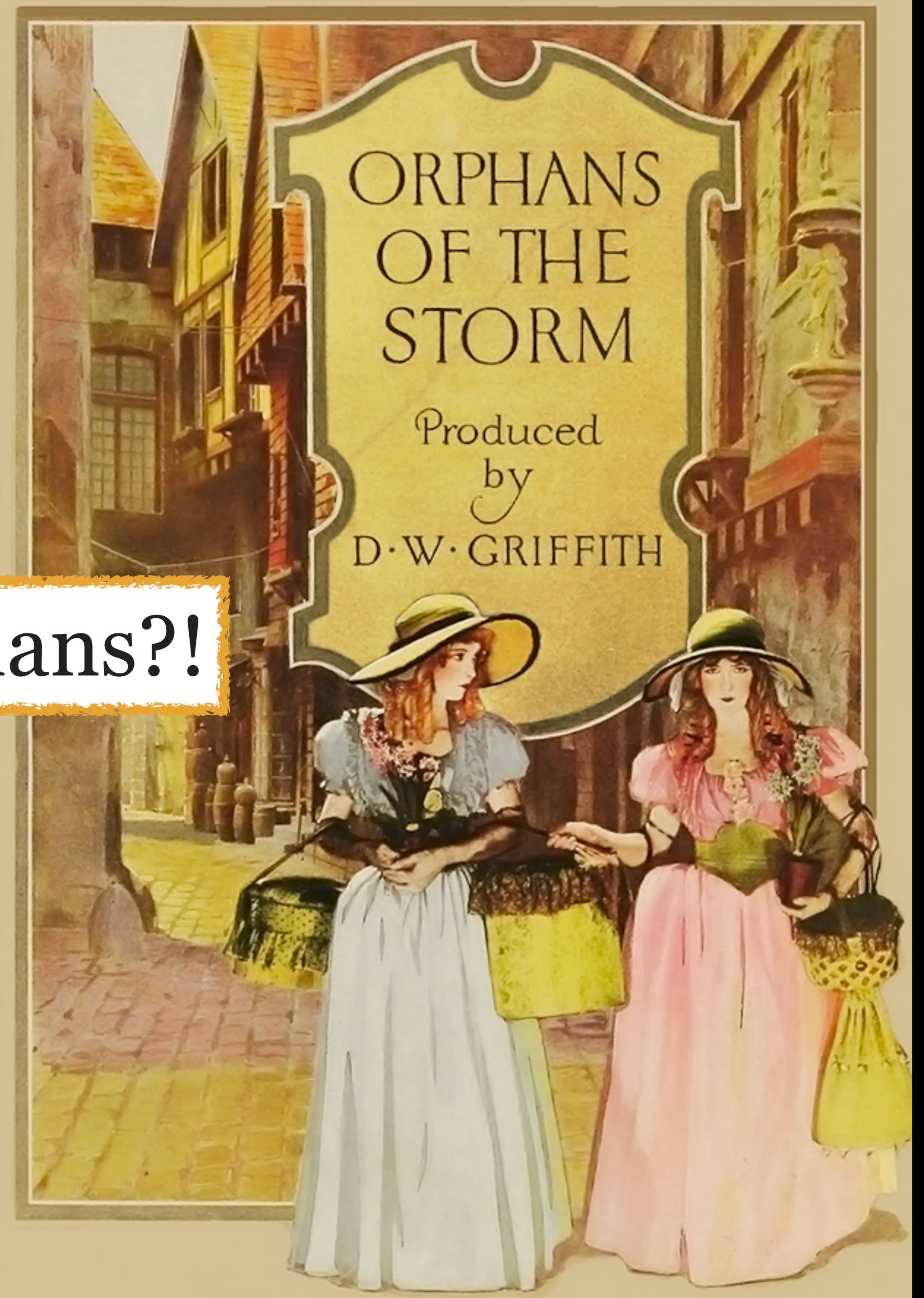
MUSIC BY
FRANZ LEHAR
ARRANGED FOR
THE PIANO BY
H.M. HIGGS



Widows & orphans?!

CHAPPELL & Co. Ltd.
37 West Seventeenth St.
LONDON NEW YORK MELBOURNE

ARCHIE GUNN



Widow: last line of a paragraph that falls at the beginning of the following page

I am writing this under an appreciable mental strain, since by tonight I shall be no more. Penniless, and at the end of my supply of the drug which alone makes life endurable, I can bear the torture no longer; and shall cast myself from this garret window into the squalid street below. Do not think from my slavery to morphine that I am a weakling or a

degenerate. 🧔

It was in one of the most open and least frequented parts of the broad Pacific that the packet of which I was supercargo fell a victim to the German sea-raider. The great war was then at its very beginning, and the ocean forces of the Hun had not completely sunk to their later degradation; so that our

Orphan: first line of a paragraph that appears by itself
at the bottom of a page

beneath the scorching sun;
waiting either for some
passing ship, or to be cast
on the shores of some
habitable land. But neither
ship nor land appeared,
and I began to despair in
my solitude upon the
heaving vastnesses of
unbroken blue.

The change happened 

whilst I slept. Its details I
shall never know; for my
slumber, though troubled
and dream-infested, was
continuous. When at last I
awaked, it was to discover
myself half sucked into a
slimy expanse of hellish
black mire which extended
about me in monotonous
undulations as far as I
could see, and in which my

A mnemonic: “An orphan is alone from the beginning; a widow is alone at the end”



widows

Defines minimum lines in a block container that *must be left on top of a new page*

Must be a positive `<integer>`

Defaults to `2`

orphans

Set minimum number of lines in a block container that
must be left at the bottom of a page

Must be a positive `<integer>`

Defaults to 2



				iOS		
widows	10	—	7	7.1	25	4.4
orphans	8	—	7	7.1	25	25

As of July, 2020

The CSS *visual formatting model* is an algorithm used by the rendering engine to:

- » Use the DOM & CSSOM to figure out what boxes to generate
- » Use the formatting context to determine the layout of the boxes
- » Use the box model to size the boxes
- » Use positioning schemes to adjust placement of the boxes

Thank you!

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CSS Layout

The Visual Formatting Model

R. Scott Granneman & Jans Carton

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Last updated 2020-08-03

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Changelog

2020-08-03 3.4: Add 2 intro slides introducing layout as a concept

Changelog

2020-08-03 3.3: Replaced Box Tree screenshots; changed screenshot of `position: absolute` to a 3-second screencast; added new diagram for the Browser Processing Pipeline under *Box Tree*; separated border styles in Box Model; added *Border Conflict Resolution* under *display & Table Layout*; switched to Granneman 1.6 theme; fixed layout & formatting problems; replaced *Widows & Orphans* lead image; replaced initial containing block images; changed title of presentation

Changelog

2020-07-16 3.2: Minor fixes; `inline` is the *initial* value for all boxes, not the *default* value; clarified anonymous block boxes; clarified `<percentage>` for padding, border, & margin; removed `<percentage>` from `border-width` & added keywords; clarified `border` & `margin`

Changelog

2020-07-16 3.1: Added more detail on `float`, with more examples; added *Contexts* to *Boxes*; added *great* diagrams to show difference between flexbox & grid; added `margin: auto` (!); added new section *Direction & Writing Mode*; updated *Multi-Column Layout* substantially, & moved `widows` & `orphans` there; updated `height`, `width`, & related properties & values compatibility charts; updated many other things

Changelog

2018-10-12 3.0: (con't. from ↓) ...moved Flexbox & Grid into their own slide decks!; updated `overflow` screenshots; `<percentage>` with padding & margin relates to width of containing block; updated `position` compatibility table; re-did all `float` & `clear` screenshots & added margins; mentioned `border-radius`; added slides on changing `<display>` to change behavior

Changelog

2018-10-12 3.0: (con't. from ↓) ...new sections on Block Layout, Inline Layout, Block Containers, Block Formatting Context, & `display` & the Flow; fixed all compatibility charts; added new, unsupported values to `align-content`; moved margin collapsing to Flow; added compatibility charts for `height` & `width`; got rid of Normal & Out-of-normal flow; Moved *Visibility* & *Opacity* to the *Decorating with CSS* slide deck; (con't. ↑)...

Changelog

2018-10-12 3.0: Added `<display>` section at beginning; new Boxes section containing new Box Tree, Box Model (with new illustrations for box model & margin collapsing, improved text, better notes on `box-sizing`, & `display: none` & `display: contents`, with compatibility chart), new Width & Height (better notes on all properties, with examples), & Overflow (better examples); new section on The Flow with (con't. ↑)...

Changelog

2018-08-05 2.9: Better explanation of grid & flexbox in Layout Modes; gave purpose of flexbox & grid in their respective sections; added details re: differences between grid & flexbox; fixed wrong ligatures

2018-05-07 2.8: Added slide re: `display: grid`; explained `display: flexbox` & `display: grid` better; added whole new grid section; TODO More grid!

Changelog

2017-11-01 2.7: Changed arrows in Box Model; replaced slide showing padding; added slide re: inline boxes; explained shorthand for `margin`, `border`, & `padding`; updated compatibility charts; moved flexbox stuff to Examples; added slide re: formatting `border` CSS

2017-06-12 2.6: Removed IE Quirks Mode note re: `box-sizing: border-box`; clarified advantages of `display: table-cell` re: `<table>`; added note to use `clear: both` most of the time; fixed formatting; changed arrow color in flexbox images; updated slide on flexbox support in browsers

Changelog

2017-06-11 2.5: Changed to most recent version of theme; fixed formatting; added note that 3D `border-style` is bad; completely re-did `padding`, `border`, & `margin`; hid `box-sizing: padding-box`

2016-04-09 2.4: Added more to flexbox support; explained when `overflow` is useful for apps; detailed advantages of `display: table`; minor updates & fixes in Box Model, Layout Modes, & Positioning Schemes; emphasized words in `position`; moved scheme slide in `position`

Changelog

2016-01-10 2.3: Added lots to, & made lots of improvements to, flexbox

2015-06-17 2.2: Re-arranged 1st `overflow` slide; added values to 1st `display` slide; added silly `float` joke

2015-06-03 2.1: Moved `position: fixed` after `position: absolute`; changed descriptions in `position` to use singular instead of plural; added details & examples for `position: sticky`; added a lot more on flexbox

Changelog

2015-05-16 2.0: Changed title & subtitle; reordered Layout Modes; moved Box Model & Layout Modes under Box Generation; more examples of `display: table-cell`; better example for `display: inline` & `display: inline-block`; better wording for `display: block`, `display: inline`, & `display: inline-block`; added `display: flex`; added browser support tables; explained `visibility` better; added flexbox section (lots!); `box-sizing: padding-box` is dead

2014-08-05 1.3: Re-took all screenshots for `display`; added screenshot for `overflow-x` & `overflow-y`; added note on `display: inline-block` & `inline-table`

Changelog

2014-08-04 1.2: Fixed wrong definition of *initial containing block* & moved to `position: absolute`; explained *block formatting context* better; moved `position: fixed`; changed TRBL to T/R/B/L; scrolling absolutely positioned elements; padding is transparent; renamed “`display`” chapter to “Display, Visibility, & Opacity”; added `opacity` sub-chapter; added screenshots for collections & sandbox; added details about `margin` & `padding`; added gift-wrapped box example to box model; showed why negative margins are sometimes needed

2014-05-14 1.1.1: Fixed errors & added details

TODO

Create illustrations for margin collapsing

Add `object-fit`

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