### CSS Visual Formatting Model Box Generation & Positioning Schemes

#### R. Scott Granneman & Jans Carton

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3.1

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

- » underneath the link to this slide show on granneman.com
  - Layout.txt

» at files.granneman.com/presentations/webdev/CSS-

## used by the rendering engine to:

- generate
- the boxes
- » Use the box model to size the boxes
- boxes

The CSS visual formatting model is an algorithm

» Use the DOM & CSSOM to figure out what boxes to

» Use the formatting context to determine the layout of

» Use positioning schemes to adjust placement of the



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

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





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





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



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...

- » their order,
- » & how they're nested

#### » all the boxes that are going to be drawn on the page,

#### 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:
, <thead>, , , >, >, &<
<tfoot>

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

layout purposes

Anonymous boxes are...

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

### An anonymous box is not an element or pseudoelement, but is generated by the rendering engine for

\$	HTML			~
	- <ul></ul>			
	<pre>- <li>The</li></pre>	Shadow	Kingdom	
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\$	CSS (SCSS)			~
\$	JS			~

The Shadow Kingdom

-

-



\$	HTML			~
	- <ul></ul>			
	- <li>The</li>	Shadow	Kingdom	
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\$	JS			~

The Shadow Kingdom

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•	HTML			~
	<ul></ul>			
	<li><li>The</li></li>	Shadow	Kingdom	
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\$	HTML	~
	- <ul></ul>	
	<pre><li><li>The Shadow Kingdom</li></li></pre>	
4		
10		
14		
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20		
\$	CSS (SCSS)	~
	-li::before {	
	content: "Title: ":	
	font-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

#### Content

Padding seemed to hover about the strangely of the stricken region.

#### Wrapping Cardboard Box Packing 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 Vase sunlight a kind of quiet dread and portent domed hills and the deep, shadowy ravines

#### Content

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

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#### By default, text fills the content area



## Content is used to measure box height & width by default

Not really what most people expect!

### Content

### 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.
padding-top
padding-right
padding-bottom
padding-left

padding

Sets amount of space on the content & border

#### Sets amount of space on the inside of the box between

#### Values

- » <length>; e.g., lem or 30px or 2vh
- e.g., 5%

## Padding is transparent, so you cannot change its color

## » <percentage> of the width of the containing block;

#### Can set padding...

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

## Set padding on each side individually

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

bottom & 2em on right & left) becomes tedious

Use shorthand to group values

## Repeating values (e.g., 1em on all sides, or 1em on top &



1em

Always goes clockwise top, right, bottom, left

padding: lem 2em; 2em 2em 1emlempadding: 1em 2em 3em 4em; 2em 4em •

1em



largin

Border

#### Content

## 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.

#### 3 properties for borders

- of the box; e.g., 10px
- e.g., none, solid, Or dotted
- » color: using <color> data type

» width: using <length> or <percentage> of the width

» style: appearance of border, from a list of values;

### 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 shorth and to group values

#### 10 px



#### 10px







## 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, & computed border-width is O
- collapse (unlike none, which shows the border)
- » dotted: • • •
- » dashed: - - -
- » solid: ------
- » double: \_\_\_\_\_
- » groove: 3D effect going in
- » ridge: 3D effect going out
- » inset: makes box appear embedded
- » outset: 3D effect that makes box appear embossed

» hidden: same as none, even in table cells with border-collapse:



# border-style: solid;

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



### 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 chartreuse;

#### border-color: orange aqua;

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>;

## 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>;

#### What I use



## 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 border-bottom: 1px dotted red;

#### border-radius

### Rounds the corners of an element's border

See CSS Effects



## Margin

#### Border

### Content

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.

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

margin

Sets amount of space on the outside of the box

#### Values

- or 20 px or 0
- e.g., 5%
- » auto

### Margin is transparent, so you cannot change its color

## » <length>; can be positive, negative, or zero, e.g., 1em

## » <percentage> of the width of the containing block;

## Set margin on each side individually

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

Use shorthand to group values



#### 10 px



#### 10 px





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*	<b>n</b>		ш

```
<aside>
 <h2>Nyarlathotep</h2>
 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
 </aside>
```

```
CSS 🖨
                                                     ⊙ 米 ⊠
 /* The aside has padding applied to all sides */
  aside {
    padding: 1rem;
  /* Beautification (not part of the lesson) */
  html {
    font-size: 24px;
🛱 JS
```

#### 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>



<b>*</b> t	ריד	ריז <i>ו</i>	гт	
<b>*</b>	<b>n</b>		LL	

<aside></aside>	
<h2>Nyarlathotep</h2>	
And where Nyarlathotep went, rest vanished,	for
the small hours were rent with the screams of	
nightmare.	
<ul></ul>	
<li>terrible phantasms</li>	
<li>monstrous guilt</li>	
<li>hellish moon-glitter</li>	
<li>mindless gargoyles</li>	

```
CSS 🖨
  /* The aside has padding applied to all sides */
  aside {
    padding: 1rem;
     The first h2 in the aside has negative margins
  applied to offset the padding of its parent. */
  aside > h2:first-child
    margin: -1rem -1rem 0;
11 }
🛱 JS
```

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

ж 83



#### 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

<div class="center">
 <h1>The Lurking
Fear<small>H.P.
Lovecraft</small></h1>

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   }
```

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

## The Lurking Fear H.P. Lovecraft



#### box-sizing

#### How dimensions (width & height) are calculated

#### box-sizing: content-box

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

Default

```
ж 63
🛱 HTML
 <div>
   <img src="http://placehold.it/300x300">
 </div>
                                         ♥ ※ $$
CSS 
  div {
    box-sizing: content-box; /* default
  div {
    margin: 30px;
    border: 10px solid deepskyblue;
    padding: 30px;
    height: 300px;
    width: 300px;
11 }
                                            ж 53
🛱 JS
```



box-sizing: border-box

not margin



#### Width & height include content, padding, & border, but

```
ж ç3
🛱 HTML
 <div>
   <img src="http://placehold.it/300x300">
 </div>
                                        ⊙ 米段
CSS
  div {
    box-sizing: border-box;
  div {
    margin: 30px;
    border: 10px solid deepskyblue;
    padding: 30px;
    height: 300px;
    width: 300px;
11 }
🖨 JS
                                            ж 53
```

#### 300 x 300

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









## 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
Maximun width of box so that it cannot be wider

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

- » auto: browser calculates & selects width (default)
- » <length>
- » <percentage>
- » 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
### 1 -

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: 

V

4 - <a href="#">Cthulhu fhtagn!</a>

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)  $\mathbf{\sim}$ 5**-p** { // width: max-content; 1 } \* JS  $\sim$ 



### 1 -

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:

V

4 - <a href="#">Cthulhu fhtagn!</a>

CSS (SCSS) V 5**-p** { width: max-content; 7 } \* JS  $\sim$  Hieroglyphics had covered the walls and pillars, and from some undetern

Cthulhu fhtagn!



### <figure>

<img src="https://s3-us-west-</pre> 2.amazonaws.com/s.cdpn.io/122116/ azathoth.jpg" alt="">

#### <figcaption>

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

#### </figcaption>

### </figure>

#### 

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 vovaaina down the apons from

#### CSS (SCSS)

 $1 - figure {$ 

```
width: min-content;
```

3 }

```
* JS
```



we found.

V

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.

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

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



### <figure>

<img src="https://s3-us-west-</pre> 2.amazonaws.com/s.cdpn.io/122116/ azathoth.jpg" alt="">

#### <figcaption>

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

</figcaption>

### </figure>

#### 

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 vovaaina down the apone from

// width: min-content;

#### CSS (SCSS)

### $1 - figure {$

```
3 }
```

\* JS

V

 $\sim$ 

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







### 1 -

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:

4 - <a href="#">Cthulhu fhtagn!</a>

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:

V

V

V

CSS (SCSS) 1-a { width: fit-content; 3 3 \* JS

Cthulhu fhtagn!



### 1 -

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: 

V

4 - <a href="#">Cthulhu fhtagn!</a>

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 { // width: fit-content; 3 5 \* JS V





### 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:

- <length>  $\rightarrow$
- » <percentage>

## » auto: browser calculates & selects height (default)

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

min-content

fit-content





		iOS		
66	11	111	46	46
66	11	11	46	46
3*	11	11	46	46

\* Requires –moz – vendor prefix



### height:



### max-content

min-content

fit-content



66		46	46
66	111	46	46
		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
- time (don't use!)

### » scroll: Render horizontal & vertical scroll bars all the

» auto: Show scroll bars only as needed if content overflows

scroll & overflow: auto can be very useful

# If you're building apps instead of webpages, overflow:

### 1 - <div>

<img

src="http://www.placecage.com /400/700">

</div>

### \* CSS

\* JS

```
or overflow-y */
3-div {
4 - /*
       overflow: auto; */
5 - /* overflow: scroll; */
       overflow: hidden; */
6-/*
     overflow: visible;
8 }
```

## 10 - /\* Uninteresting stuff below here

~

V



## overflow: visible displays overflow content (default)



#### 1 - <div>

<img

src="http://www.placecage.com /400/700">

V

~

V

</div>

### **CSS**

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



## overflow: hidden clips overflow content

### 1-<div>

2 <img

src="http://www.placecage.com
/400/700">

V

3 </div>

### \* CSS ~ or overflow-y \*/ 3-div { overflow: auto; \*/ 4 - /\* overflow: scroll; overflow: hidden; \*/ 6 - /\* 7 - /\* overflow: visible; \*/ 8 } 10 - /\* Uninteresting stuff below here \* JS



# overflow: scroll always displays scrollbars, even if unnecessary

#### 1-<div>

<img

src="http://www.placecage.com
/400/700">

V

3 </div>

### CSS $\sim$ or overflow-y \*/ 3-div { overflow: auto; overflow: scroll; \*/ 5 - /\* overflow: hidden; \*/ 6 - /\* overflow: visible; \*/ 7 - /\* 8 } 10 - /\* Uninteresting stuff below here \* JS V



# 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





overflow	4	1	1	1	]	1
overflow-x	5	3.5	3	1		1
overflow-y	5	3.5	3	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*)

```
ж 83
🛱 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:
 <div>
   "Ph'nglui mglw'nafh Cthulhu R'lyeh
   wgah'nagl fhtagn."
 </div>
 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
                                            ж ÇQ
CSS 
                                         \odot
  /* 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. */
  div {
    display: none;
7 /* \clubsuit Not part of the lesson \clubsuit */
                                            ж 83
🗘 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 ecstacies 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

#### VISIT ANIMALS CONSERVATION 5 About the Animals

Veterinary Hospital Animal Food & Nutrition Center Science & Research Enrichment & Training 19,000 anima **Species Survival Plans** + 90 acres So You Want to be a Zookeeper? + 18 students = one wild preschool





### **FEATURES**

- Summer Zoo Weekends & Jungle Boogie
- 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*

	<ul class="card-list"></ul>
	<li></li>
	<a <="" class="card" td=""></a>
	href="#">⇔
10	
	<li></li>
	<a <="" class="card" td=""></a>
	href="#"><>
20 -	<li></li>
21 🕨	<a <="" class="card" td=""></a>
	href="#"><>
28	

CSS (SCSS)

```
.card-list {
     display: flex;
     justify-content: space-around;
6-li {
    display: contents;
8 }
* JS
                                   V
```



### Azathoth

 $\mathbf{v}$ 

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.



	<ul><li><ul :<="" class="card-list" li=""></ul></li></ul>
	<li></li>
	<a <="" class="card" th=""></a>
	href="#">⇔
10	
	<li></li>
	<a <="" class="card" th=""></a>
	href="#">⇔
20 -	<li></li>
	<a <="" class="card" th=""></a>
	href="#"><>

CSS (SCSS)

```
1 - .card-list {
2   display: flex;
3   justify-content: space-around;
4  }
5   
6 - li {
7   // display: contents;
8  }
   JS
```



 $\sim$ 

~

### 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



### 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-Sothothonly а congeries of iridescent globes, yet stupendous in its malign suggestiveness.

DANGER			
display:			
none	4	12	1
contents		79	37 6

🐞 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*
- follows them flows around them

» Floated boxes are *moved to one side* & content that



## Block layout means that boxes are vertically adjacent

•
 1



## 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 float Soon!)

# causes content to flow around floated boxes (more on



Inline-Level Boxes



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

inline-level parents?

## What about nested inline-level boxes that do not have room to fit on a line; i.e., inline-level children inside

## Those children are either...

» *inline boxes* that break across lines instead move to the next line



# » *atomic inline boxes* that do *not* break across lines &

## Inline box

## Contents break across lines; e.g., <b>, <i>, <a>, <span>

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

\* HTML

### ⊴ **~**

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>. 

### 

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

### \* CSS

\* JS

span { border: 4px solid orange <u>}</u>

# 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

> OF GUITEZEN MENENELUTENT MONEN CENSE, MIN FENIN MINE seemed a well-drilled chorus of hoarse voices would rise in sing-song chant that hideous phrase or ritual:

2-<div>

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

- </div>
- 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.

\$ CSS

View Compiled Tidy

×

1 - /\* The element generates one or more inline element boxes. All parts of the box model are drawn, but only the left and right margin, border, and padding occupy space in the flow. \*/

```
3√div {
    display: inline;
```

```
7 - /* \downarrow Not part of the lesson \downarrow */
```

Tidy × 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 ecstacies 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 singsong chant that hideous phrase or ritual: "Ph'nglui mglw'nafh Cthulhu R'lyeh Then the men, having reached a spot where the trees were wgah'nagl fhtagn." 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., <img>, <video>, & <input>

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

```
ж 83
🛱 HTML
 ITOM THE GUITS OF METT. 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:
 <div>
   "Ph'nglui mglw'nafh Cthulhu R'lyeh
   wgah'nagl fhtagn."
 </div>
 Then the men, having reached a spot
                                                  phrase or ritual:
 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
                                         ⊙ 米路
CSS 
  /* 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). */
  div {
    display: inline-block;
  /* \clubsuit Not part of the lesson \clubsuit */
                                            ж 83
🛱 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 ecstacies 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



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 -
- 2 <a href="#">Search</a>
- 3 <a href="#">Site Map</a>
- 4 < <li><a href="#">Shopping Cart</a>
- 5 < <li><a href="#">Your Account</a>
- 6

•	CS	S (SCSS)				
1-li {						
		<pre>display: inline; // compare to display: inline</pre>				
		margin: .5em;				
4		border: 1px solid gainsboro;				
		<pre>padding: .5em 1em;</pre>				
		<pre>background-color: whitesmoke;</pre>				
	}					





And remember — the rendering engine also creates the viewport

# anonymous atomic inline boxes around every word in

Block Layout



# Block layout means that boxes are vertically adjacent

•
 1

5 C		
C		
4		
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
1		

# stacked inside block-level parents?

What about nested block-level boxes; e.g., block-level children





-	

# 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



## Content

## margin-bottom: 30px

## Content

## 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 -
- These boxes have 20px margin on <b>all four sides</b>.

* CS	S (SCSS)			
20 - div {				
	height: 200px;			
	width: 200px;			
	<pre>background-color: #B59916;</pre>			
24	<pre>font-size: 100px;</pre>			
	<pre>display: flex;</pre>			
	justify-content: center;			
	align-items: center;			
28 👻	<pre>&amp;:nth-of-type(2) {</pre>			
	<pre>background-color: #16B5AF;</pre>			
30	}			
21 <b>1</b>				
♥ JS				

 $\mathbf{v}$ 

# adjacent siblings

Margin collapsing between 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">
     <div class="inner top">&nbsp;</div>
     <div class="inner middle">&nbsp;</div>
     <div class="inner bottom">&nbsp;</div>
 5 </div>
 7 - 
 8 - All four of these boxes have 20px margin
    on <b>all four sides</b>.
   CSS (SCSS)
 1 - .outer {
     margin: 20px;
 5-.inner {
     margin: 20px;
 9 - .outer {
10 // position: absolute;
11 // float: left;
12 // overflow: hidden;
13 // display: flow-root;
14 }
+ JS
```

box

 $\mathbf{v}$ 

×

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



```
* HTML
1 - <div>1</div>
2 <div class="margins-only"></div>
3 - <div>3</div>
4 - 
    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>.
   CSS (SCSS)
                                          ×
1-div {
    margin: 20px;
  -.margins-only {
    height: 0;
```

\* JS

```
V
```

2

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



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 Dolor sit amet Lorem ipsum </div>

ipsum

Why blocks? Because the triggers block layout

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

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 wile would only make the
   Elder Sign and tell him the way
   to Nir and Ulthar.
   <img
   src="https://upload.wikimedia.org
   /wikipedia/commons/archive
   /0/02/20140831135344%21Elder_sign
   .jpg" alt="Elder Sign">
5 - 
     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
```



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 thirteenhundred 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 wile would only make the
   Elder Sign and tell him the way
   to Nir and Ulthar.
   <img
   src="https://upload.wikimedia.org
   /wikipedia/commons/archive
   /0/02/20140831135344%21Elder_sign
   .jpg" alt="Elder Sign">
 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
```

 $\sim$ l⊤img { float: left; margin: .4em .5em .5em 0; This distance has a stand the second and the second and the \* JS  $\mathbf{v}$ 

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 thirteenhundred 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, may kill a cat. Very pleasant were the suburbs of Ulthar, with their little

Often you'll want to add pleasanter was the quaint town margins around a floated object and numberless below the balance of the balance o

graceful cats afford space enough. Carter, the cats being somewhat dispersed by









# 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 -
```

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.

#### 

#### 7 -

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.

V

V

# blue red 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.

#### CSS

9 //n>

```
* JS
```

## No float!









```
HTML
```

```
1 - <div class="blue">blue</div>
2 - <div class="red">red</div>
3-<div class="green">green</div>
4 -
```

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.

 $\sim$ 

×

#### \* CSS

```
1 - .blue {
     float: right;
3 }
5-.red {
     float: right;
   .green {
     float: right;
11 }
* JS
```

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce orci libero, mollis id neque green red 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.









Cthulhu



Randolph Carter



Shub-Niggurath



Azathoth



Nyarlathotep





Star Vampire



Shoggoth

Hastur



Tsathaggua



Abdul Alhazred



Yog-Sothoth

**Rhan-Tegoth** 

Cyaegha



Cthugha

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

#### HTML

```
~ <div><img src="https://s3-us-
west-2.amazonaws.com/s.cdpn.io
/122116/cthulhu.jpg" alt="Cthulhu"
width="200"><br>Cthulhu</div>
```

```
<div><img src="https://s3-us-
west-2.amazonaws.com/s.cdpn.io
/122116/randolph-carter.jpg"
alt="Randolph Carter" width="200">
<br>Randolph Carter</div>
```

```
5 < <div><img src="https://s3-us-
west-2.amazonaws.com/s.cdpn.io
/122116/Shub%20Niggurath"
alt="Shub-Niggurath" width="200">
<br>Shub-Niggurath</div>
```

```
6
```

<div><img src="https://s3-uswest-2.amazonaws.com/s.cdpn.io /122116/tsathaggua.jpg" alt="Tsathaggua" width="200"> <br>Tsathaggua</div>

8

9-<div><img src="https://s3-uswest-2 amazonaws com/s cdnn io

CSS

```
* JS
```



Cthulhu



Abdul Alhazred





 $\sim$ 

×

**Randolph Carter** 



Shub-Niggurath



Tsathaggua



Yog-Sothoth



Azathoth



Nyarlathotep



Rhan-Tegoth

A A



Cyaegha



Cthugha

```
HTML
```

```
1 ~ <div><img src="https://s3-us-west-2.amazonaws.com
/s.cdpn.io/122116/cthulhu.jpg" alt="Cthulhu"
width="200"><br>Cthulhu</div>
2
3 ~ <div><img src="https://s3-us-west-2.amazonaws.com
/s.cdpn.io/122116/randolph-carter.jpg" alt="Randolph
Carter" width="200"><br>Randolph Carter</div>
4
5 ~ <div><img src="https://s3-us-west-2.amazonaws.com
/s.cdpn.io/122116/Shub%20Niggurath" alt="Shub-Niggurath"
width="200"><br>Shub-Niggurath
```

```
6
```

```
7 < div><img src="https://s3-us-west-2.amazonaws.com
/s.cdpn.io/122116/tsathaggua.jpg" alt="Tsathaggua"
width="200"><br>Tsathaggua</div>
```

```
8
```

```
9 < <div><img src="https://s3-us-west-2.amazonaws.com
/s.cdpn.io/122116/abdul-alhazred.jpg" alt="Abdul
Alhazred" width="200"><br>Abdul Alhazred</div>
```

10

```
11 - <div><img src="https://s3-us-west-2.amazonaws.com
    /s.cdpn.io/122116/Yog-Sothoth.jpg" alt="Yog-Sothoth"
    width="200"><br>Yog-Sothoth</div>
```

12

```
12 - divazima erc-"https://s2-us-west-2 amazonaws com
```

CSS

×



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** 



# Why float can be a problem 😒 😑







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



### Tsathaggua



Abdul Alhazred



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 -
```

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 {
     float: right;
3 }
5 . red {
     float: right;
    .green {
     float: right;
11 }
12
✤ JS
```

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce orci libero, mollis id

 $\sim$ 

×

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 (most of the time, just use this one)

# Element moves down to clear past left & right floats

```
HTML
                                       ×
   <div class="blue">blue</div>
   Lorem ipsum dolor sit amet,
   consectetur adipiscing elit. Fusce
   orci libero, mollis id neque et,
   feugiat semper libero. In porta porta
   aliquet.
   <h2 class="cleared">
     Donec dictum hendrerit blandit
   </h2>
8 -
   Lorem ipsum dolor sit amet,
   consectetur adipiscing elit. Fusce
* CSS
                                       ×
   .blue {
     float: right;
5- .cleared {
6 /*
        clear: both; */
7}
* JS
                                       \sim
```

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	~
<pre>1 &lt; <div class="blue">blue</div> 2 &lt; <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  5 &lt; <h2 class="cleared"> 6 Donec dictum hendrerit blandit 7 </h2> 8 &lt; <p>9 Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce</p></p></pre>	a
* CSS	`
<pre>1blue { 2 float: right; 3 } 4</pre>	
<pre>5. cleared { 6     clear: both; 7 }</pre>	
* 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 .blue { float: right; .red { float: right; clear: right; 10. .green { float: right; clear: right; 15 div + p { 16. /\* clear: right; \*/ 17 } 18 19. /\* For beautificaiton only \*/ 20 .blue {background-color: blue;} rad Shackaround-color. rad.2 \* JS

V

 $\mathbf{\sim}$ 

V

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 - 
     Lorem ipsum dolor sit amet,
   consectetur adipiscing elit.
```

Fusce orci libero, mollis id

V

V

#### \* CSS

```
1 - .blue {
     float: right;
5-.red {
     float: right;
     clear: right;
L0-.green {
     float: right;
     clear: right;
15-div + p {
     clear: right;
* 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.









## Why did the Web developer drown?

Why did the Web developer drown? right!

## They didn't know if they should float: left or float:

# 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* 

via display: flow-root or automatically

# A block formatting context is created either manually

## 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:

- boxes
- display behind a floated box

» Suppresses unwanted parent-child margin collapsing » Contains internal floats that overflow their containing

» Excludes external floats that cause adjacent blocks to

# Suppress Child-Parent Margin Collapsing

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

### \* HTML

### 3 ≺div>

#### 

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.

```
CSS (SCSS)
1 div {
     background-color: pink;
3 }
    background-color:
   transparentize(dodgerblue, .5);
     margin: 1em;
8 }
* JS
                                      V
```

## Unwanted parent-child margin collapsing

 $\mathbf{\sim}$ 

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.

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

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







### \* HTML

### 3√ <div>

#### 

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.

### CSS (SCSS)

```
1 div {
     background-color: pink;
     padding-top: 1em;
     padding-bottom: 1em;
7 p {
     background-color:
   transparentize(dodgerblue, .5);
* JS
```

## Unwanted parent-child margin collapsing

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.

×

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

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







### \* HTML

### 3 <div>

#### 

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.

#### CSS (SCSS)

```
1 div {
     background-color: pink;
     // padding-top: 1em;
     // padding-bottom: 1em;
     display: flow-root;
8 - p {
     background-color:
* JS
```

## Unwanted parent-child margin collapsing

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.

V

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

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







# Contain Internal Floats

# Remember, block layout ignores floats
```
HTML
1 - \langle h2 \rangle Floats that are children of block-level boxes \langle h2 \rangle
   <img src="https://via.placeholder.com/150x150/000/fff/?text=child"</pre>
   alt="">Phlegeth ngshugg llll Yoggoth shtunggliagl gotha, ep ch' nafln'gha syha'h
   naShub-Niggurath y-shtunggli, geb Cthulhu R'lyeh lloignyth.
```

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

CSS (SCSS)

#### Floats that are children of block-level boxes

#### child

Phlegeth ngshugg IIII Yoggoth shtunggliag gotha, ep ch' nafln'gha syha'h naShub-Niggurath

y-shtunggli, geb Cthulhu R'lyeh lloignyth.





 $1 - \langle h2 \rangle$ Floats that are children of block-level boxes</h2>

×

×

V

#### 

#### <img

src="https://via.placeholder.com /150x150/000/fff/?text=child" alt="">Phlegeth ngshugg llll Yoggoth shtunggliagl gotha, ep ch' nafln'gha syha'h naShub-Niggurath y-shtunggli, geb Cthulhu R'lyeh lloignyth. 

#### Floats that are children of block-level boxes



you want!

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

CSS (SCSS)

\* JS

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

# But now, your floated image is overflowing your because the floated <img> is taller than the — not what





#### 

#### <img

src="https://via.placeholder.com/15 0x150/000/fff/?text=child" alt="">Phlegeth ngshugg llll Yoggoth shtunggliagl gotha, ep ch' nafln'gha syha'h naShub-Niggurath y-shtunggli, geb Cthulhu R'lyeh lloignyth.

#### CSS (SCSS) 1 - p { background-color: transparentize(dodgerblue, .5); padding: 10px;

```
display: flow-root;
```

```
}
```

## Floats that are children of block-level boxes

child

 $\sim$ 

 $\mathbf{v}$ 

Phlegeth ngshugg Illl 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



```
background-color:
   transparentize(dodgerblue, .5);
     padding: 10px;
6 img {
* JS
```

# Floats that are siblings of block-level boxes

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.

V

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

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











padding: 10px;

display: flow-root;

transparentize(dodgerblue, .5);

V

# Floats that are siblings of block-level boxes

sibling

\* JS

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?









churunuknych geb i shugg y hun shugg shogg, fhtagn naflChaugnar Faugn ee ya czhro f'lw'nafh llll naYoggoth shugg y'hah.

#### 

#### 10 -

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

CSS (SCSS)  $\sim$ 1 p { background-color: transparentize(dodgerblue, .5); padding: 10px; display: flow-root; ~ \* JS

# sibling

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

# 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.

This is probably *not* the layout you want

Instead, you want flexbox (later!)











# display & the Flow

### <display-outside> keywords

- 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

# » specify the element's outer display type; i.e., its role in



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

Practically speaking, you vesting 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

# PRO TIP-

# Practically speaking, you will never explicitly need to



#### display: block

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

```
ж 83
🛱 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:
 <div>
   "Ph'nglui mglw'nafh Cthulhu R'lyeh
   wgah'nagl fhtagn."
 </div>
 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
                                            ж құ
CSS 
                                         \odot
  /* The element generates a block box.
  The standard box model is used. */
  div {
    display: block;
   /* \clubsuit Not part of the lesson \clubsuit */
  div {
    margin: 2em;
    border: 2em solid hsla(0, 100%, 50%,
                                            ж 83
🖨 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 ecstacies 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.

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







#### display: inline

& 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

Default value for all boxes

# Generates inline boxes that are as wide as their content

HTML

9

18

#### <body>

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

CSS

28

+ 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 semifluid 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.

V

V

×





```
HTML
```

1 - <h1>The Colour out of Space<small>H.P. Lovecraft</small></h1>

#### 

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>.

#### 

#### <D>

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

#### CSS ⇒ span { border: 4px solid orange; \* JS V

# 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

> OF GUITEZEN MENENELUTENT MONEN CENSE, MIN FENIN MINE seemed a well-drilled chorus of hoarse voices would rise in sing-song chant that hideous phrase or ritual:

2-<div>

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

- </div>
- 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.

\$ CSS

View Compiled Tidy

×

1 - /\* The element generates one or more inline element boxes. All parts of the box model are drawn, but only the left and right margin, border, and padding occupy space in the flow. \*/

```
3√div {
    display: inline;
```

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

Tidy × 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 ecstacies 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 singsong chant that hideous phrase or ritual: "Ph'nglui mglw'nafh Cthulhu R'lyeh Then the men, having reached a spot where the trees were wgah'nagl fhtagn." 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

#### 1 - <h2>

Necronomicon: <small>The Best Weird Tales of H. P. Lovecraft</small> 3 </h2>

5-<h2 class="subtitle"> Necronomicon: <small>The Best Weird Tales of H. P. Lovecraft</small> 7 </h2>

# Lovecraft

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

#### \* CSS $\sim$ 1 - h2.subtitle small { display: block; font-size: 1.2rem; 4 } \* JS V

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

## <small>: from inline to block

#### \* HTML 1 - Life Writings Pop Culture Scholarship Store 7 9-class="nav"> Life 10 -Writings 12- Pop Culture Scholarship Store 15 \* CSS

5 naddina: 25 m 5 m.	4 border: 1px solid aainsboro:	5	z	padding: .25em .5em;
5 naddina: 25 m 5 m.	4 border: 1px solid gainsboro;	5 6	}	<pre>padding: .25em .5em;</pre>
2 display: inline;			I	nav li {



V

×

V

- Writings
- Pop Culture
- Scholarship
- Store



# : from list-item to inline

#### ire ip



Pop Culture

Scholarship

Store



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

lines

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

## display: inline flow-root <outside> <inside>

## Generates atomic inline box that does not break across

```
ж 83
HTML
 ITOM THE GUILS OF MELL. NOW AND THEM 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:
 <div>
   "Ph'nglui mglw'nafh Cthulhu R'lyeh
   wgah'nagl fhtagn."
 </div>
 Then the men, having reached a spot
                                                   phrase or ritual:
 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
                                            Ж ҚЗ
CSS
                                         \odot
  /* 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). */
  div {
    display: inline-block;
7 /* \clubsuit Not part of the lesson \clubsuit */
                                             ж <u>г</u>з
🛱 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 ecstacies 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



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



# 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 or brings

# display & Table Layout



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

*Triggers table layout* inside the box:

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

• H	TML				~
1-4	div>				
	<div></div>				
	<div>Row</div>	1.	Cell	1	
4-	<div>Row</div>	1.	Cell	2	
	<div>Row</div>	1,	Cell	3	
		~*			
	<div></div>				
8 –	<div>Row</div>	2,	Cell	1	
	<div>Row</div>	2,	Cell	2	
10-	<div>Row</div>	2,	Cell	3	
12 <	/div>				
• C	SS Compiled				~
1 - 6	liv {				
2	display. to	abl a	<u>a</u> •		
33			-,		
4 - 6	$\frac{1}{100}$				
5	display. to	abla	e-row		
63			c rom	,	
7-0	liv > div > 0	div	ş		
8	display: to	abl	e-cell		
9 3				-,	
د					
A 10					V

72

Row 1, Cell 1

Row 2, Cell 1

Row 1, Cell 2	Row 1, Cell 3
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		
table-header-group	<thead></thead>	
table-footer-group	<tfoot></tfoot>	
table-row		
table-cell	> or >	New flow layout
table-column-group	<colgroup></colgroup>	
table-column	<col/>	
table-caption	<caption></caption>	New flow layout



#### display: table-cell

## Causes box to behave like or

» Content determines width » No margin



٥	I	HTML
		<article></article>
5		
8		

#### ~ CSS article { display: table; p { display: table-cell; border: 2px solid black; 8 } JS V

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.

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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.

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 concavebottomed courses which rested upon them.



٥	I	HTML
		<article></article>
5		
8		

#### CSS × article { display: table; -p { display: table-cell; border: 2px solid black; JS V

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.

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


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

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

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





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.

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





# Flexbox

## 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

position

## Specifies the *positioning algorithm* for selected elements

Values:

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

## position: static

## Box is not positioned

### 🛱 HTML

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. 

## <img

```
src="https://upload.wikimedia.org/wikip
edia/commons/0/02/Elder sign.jpg"
alt="Elder Sign">
```

### 

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

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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 thirteenhundred 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 Forth's code, ruling feebly our own dreamland and having no newer or hebitation.

## CSS

🗱 JS





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

## Practically speaking, you will never explicitly need to set it

## PRO TIP-



## 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

```
<u> ※ 53</u>
🛱 HTML
    LELTON, DUC CHE LATHEL AND HIS WITE
    would only make the Elder Sign and
    tell him the way to Nir and Ulthar.
  <img
  src="https://upload.wikimedia.org/wikip
  edia/commons/0/02/Elder sign.jpg"
  alt="Elder Sign">
  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
                                           ж құ
CSS
                                        \odot
 img
   position: relative;
   left: 100px;
   top: 100px;
                                           ж 23
🖨 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 wile would only make the Elder Sign and tell him the way to Nir and Ulthar.

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had sealed a living human sacrifice when they built it thirteenide, the frequent presence of cats (who all arched their backs at





## position: absolute

it was originally

Containing block is either...

» Any positioned box (but not position: static because that's not positioned!) » Initial containing block

## Positioned element is placed in a specified position relative to its containing block, & the gap closes where

### **EPISCOPAL** DIOCESE OF **CHICAGO**

Our Diocese Building the Church



An Easter Message from **Bishop Lee** 

### The Time They Began to Live Again

**Bishop's staff supports Emmanuel** LaGrange in transition

young children.

Read more.

about:blank

Places of Grace and Gladness

A new video tells the story of Places of Grace and

Gladness, a campaign to support ministry across

the Diocese of Chicago. Learn more about the

□ ■ Bonjour ▼ S-Foc Ent ▼ RSG ▼ G ▼ WS ▼ Soc ▼ Apps ▼ lets ▼ News ▼ Save ▼ Open URL

### Bishop's Letter on Renk Diocese, South Sudan

April 23, 2014

Dear Friends:

We have received credible reports from our friends in the Diocese of Renk that the area is engulfed in fighting between the South Sudanese army and rebel troops loyal to former deputy president Riek Machar. It is not clear who controls the town.

Read more.

QUICK LINKS Calendars **Clergy Openings** Supply Clergy Lay Employee Openings Keeping God's People Safe CHURCH LINKS Lectionary Anglican Cycle of Prayer The Episcopal Church St. James Cathedral Episcopal Charities and Community

campaign.

## Viewport

The Diocese of Chicago devotes itself to three simple goals: Grow the Church. Form the faithful. Change the world.



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### Healing the World

Telling Our Stories Congregational Vitality



The Rev. Andrea Mysen has been called as associate for ministries. She will work collaboratively to support congregations, search committees and vestries through a broad range of activities including recruitment and leadership development.

Karin Gutierrez joins us as administrative assistant for Operations. Gutierrez is a familiar face and voice to those who visit St. James Commons, having served as morning receptionist since August 2012. Read more.

### Calendar

Analyzing Systemic Racism Workshop May 8-10 | Presented by Crossroads Antiracism Organizing and Training at Bexley Seabury

> 0 C Reader

Make Music Chicago June 21 | Save the date

Bishop's Associates Bus Tour September 27 | Details to come about a visit to the Peoria Deanery and picnic at Jubilee State Park

Clergy Conference October 5-7 | Save the date

Fierce Conversation Workshop October 13-16 | Nicholas Center

Episcopal Charities and Community Services Ball November 7 | Radisson Aqua Blu

View a complete listing of upcoming diocesan events.

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CONTACT US Staff Directory

> St. James Commons 65 E Huron St. Chicago, IL 60611

Parking Information

+

## Initial Containing Block



### HTML

```
1 <div class="icb"></div>
2 <div class="outside-icb"></div>
3 < <p>
```

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CSS (SCSS)

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

3-.icb {

```
4 border: 15px solid
hsla(210,100%,50%,.5);
5 position: absolute;
6 top: 0;
7 bottom: 0;
8 left: 0;
9 right: 0;
10 }
11
```

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### HTML

```
1 <div class="icb"></div>
2 <div class="outside-icb"></div>
3 < <p>
```

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CSS (SCSS)

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

3-.icb {

```
4 border: 15px solid
hsla(210,100%,50%,.5);
5 position: absolute;
6 top: 0;
7 bottom: 0;
8 left: 0;
9 right: 0;
10 }
11
```

lectus în consequat unancorper. Vestibulum facilisis interdum tristique.

Sed sit amet convallis quam. Nullam ac ipsum eros. Quisque non augue facilisis, tincidunt leo vitae, scelerisque elit. Integer augue justo, ullamcorper vel tortor et, fringilla fermentum felis. Morbi tempus eu neque sed laoreet. Vivamus elementum est eu lacus euismod, id rutrum purus hendrerit. Nulla facilisi. In porta nisi quis imperdiet cursus. Aliquam tincidunt lorem et pharetra pretium. Praesent fringilla fermentum lectus, vel gravida diam pulvinar eget. Sed efficitur arcu vel nisi feugiat egestas. Nulla ut pulvinar erat. Proin mi mi, dignissim fermentum euismod et, convallis nec felis.

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### HTML

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

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CSS (SCSS)

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

3-.icb {

```
border: 15px solid
   hsla(210,100%,50%,.5);
     position: absolute;
     top: 0;
     bottom: 0;
      left: ∅;
     right: 0;
10 }
JS
```

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<sup>at</sup> Vertical & horizontal scrolling fêns unginssini, varius ioreni et, tineitunit ingula.

vestibulum ornare. Proin vel ex sodales, euismod tortor quis, pellentesque orci. Nulla tis arcu in, tristique ligula. Ut dictum mi id tristique accumsan. Maecenas ultricies, ngue, dolor libero iaculis sem, quis laoreet est augue sit amet justo. Quisque quis pibus ipsum. Phasellus posuere ligula tellus, ac ultricies orci mattis sit amet. Aliquam id non, placerat velit. Cras sit amet arcu non orci tempor ornare. Nunc cursus, mauris ac

```
HTML
```

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

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

### 3 -

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CSS (SCSS)

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

```
3-.icb {
     border: 15px solid hsla(210,100%,50%,.5);
     position: absolute;
     top: 0;
     bottom: 0;
     left: 0;
     right: 0;
10 }
   // Blocks positioned outside of the initial containing block
```

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## 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

<b>#</b> HTML	ж 53	Carte
<pre>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. for the second second</pre>		timid the at stren, saw t roofs affrig peop the fa At no his fa Skai, hund
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		the tr signi cotta and c cobb
✿ CSS	ж құ	half-s
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seated on an ivory dais in a festooned shrine at the top of the temple, was fully three centuries old; but very keen of mind and memory. From him Carter learned many things about the gods, but mainly that are indeed only Earth's gods, ruling feebly our own dreamland and having no power or habitation where. They might, Atal said, heed a man's prayer if in good humour; but one must not think of bing to their onyx stronghold atop Kadath in the cold waste. It was lucky that no man knew where ath towers, for the fruits of ascending it would be very grave. Atal's companion Banni the Wise had drawn screaming into the sky for climbing merely the known peak of Hatheg-Kia. With unknown ath, if ever found, matters would be much worse; for although Earth's gods may sometimes be assed by a wise mortal, they are protected by the Other Gods from Outside, whom it is better not to uss. At least twice in the world's history the Other Gods set their seal upon Earth's primal granite; once tediluvian times, as guessed from a drawing in those parts of the Pnakotic Manuscripts too ancient to ead, 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.

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## position: fixed

Positioned element is placed in a specified position originally

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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

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 hiccoughed 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.









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

## PRO TIP-



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

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(e.g., <h1>, <h2>, <h3>) in a document

# Using position: sticky on the heading elements

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HTML
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1 - <h1>Cthulhu Mythos</h1>
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### 2 -

The <b>Cthulhu Mythos</b> is a 3 🗸 shared fictional universe, based on the work of American horror writer H. P. Lovecraft.

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The term was first coined by August 6 🕶 Derleth, a contemporary correspondent of Lovecraft, who used the name of the creature <i>Cthulhu</i>–a central figure in Lovecraft literature and the focus of Lovecraft's short story "The Call of Cthulhu" (first published in pulp magazine <i>Weird Tales</i> in 1928)-to identify the system of lore employed by Lovecraft and his litarary successors The writer

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











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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*.











```
HTML
```

```
1 - <h1>Cthulhu Mythos</h1>
```

### 2 -

The <b>Cthulhu Mythos</b> is a 3 🗸 shared fictional universe, based on the work of American horror writer H. P. Lovecraft.

5 -

The term was first coined by August 6-Derleth, a contemporary correspondent of Lovecraft, who used the name of the creature <i>Cthulhu</i>-a central figure in Lovecraft literature and the focus of Lovecraft's short story "The Call of Cthulhu" (first published in pulp magazine <i>Weird Tales</i> in 1928)-to identify the system of lore employed by Lovecraft and his litarary successors The writer

CSS **\*** 

```
1 - h1, h2, h3 {
     position: sticky;
     top: 0;
  17
```

× Tidy

View Compiled

Tidy

×

### 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:

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# "Lovecraft" mythos













```
HTML
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CSS

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  }
```

Tidy ×

View Compiled

×

Tidy

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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>

1-<	div>
2 🗸	<dl></dl>
3 👻	<dt>A</dt>
4 🗸	<dd>The Allman Brothers Band</dd>
5 🗸	<dd>The Animals</dd>
6	
7 👻	<dl></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	



### A

## The Allman Brothers Band

# The Animals

### В

Badfinger

The Beatles

**Big Star** 

Blind Faith

The Black Keys

The Blasters

Bob Dylan

The Brian Jonestown Massacre

Bruce Springsteen

 	 _	
	-	

1-<	div>
2 🗸	<dl></dl>
3 🗸	<dt>A</dt>
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17 🗸	<dd>Bruce Springsteen</dd>
18 🗸	<dd>The Byrds</dd>
19	



The Beatles

Big Star

Blind Faith

The Black Keys

The Blasters

Bob Dylan

The Brian Jonestown Massacre

**Bruce Springsteen** 

The Byrds

L

Led Zeppelin

Levon Helm

Little Feat



HTM		Tidy
1 <b>-<di< b=""></di<></b>	V>	
2- <	dl>	
3 🗸	<dt>A</dt>	
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16 🗸	<pre><dd>The Brian Jonestown Massacre</dd></pre>	
17 🗸	<dd>Bruce Springsteen</dd>	
18 🕶	<dd>The Byrds</dd>	

</dl>

TA

CSS				Tidy View Compiled
1 <del>-</del> dt { 2	<pre>position: cop: 0;</pre>	<pre>sticky;</pre>		

# The Byrds

В

L

# Led Zeppelin

# Levon Helm

Little Feat

Lou Reed

Love

## R

Radiohead

The Rascals

R.E.M.

The Replacements



1-<	div>
2 🗸	<dl></dl>
3 👻	<dt>A</dt>
4 🗸	<dd>The Allman Brothers Band</dd>
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16 🗸	<dd>The Brian Jonestown Massacre</dd>
17 🗸	<dd>Bruce Springsteen</dd>
18 🗸	<dd>The Byrds</dd>
19	



### 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:							
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		<b>16‡</b>	32* 59	7.1§ 13	8§ 13	56+	67

\* Doesn't work with any elements + Works with > only # Works with ; not /<thead> § Requires -webkit-





# Stacking

# z-index: <integer>

*x-index* is horizontal y-index is vertical *z-index* is the stacking order

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

covers the other

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

# When elements overlap, z-index determines which one

# These are not popup windows, just boxes on the page

```
🛱 HTML
```

```
tell him the way to Nir and Ulthar.
  <img class="derleth-sign"
  src="http://upload.wikimedia.org/wikipe
  dia/commons/archive/6/63/20080124014737
  !Elder sign derleth.jpg" alt="Elder
  Sign Derleth Version" />
  <img class="lovecraft-sign"
  src="https://upload.wikimedia.org/wikip
  edia/commons/0/02/Elder sign.jpg"
  alt="Elder Sign">
  At noon he walked through the one
    broad high street of Nir, which he
    had once visited and which marked his
                                           ж çұ
CSS
                                        \odot
   .derleth-sign {
    position: absolute;
    left: 170px;
    top: 170px;
    z-index: 10;
   .lovecraft-sign {
    position: absolute;
    left: 100px;
    top: 100px;
12 }
                                           <u> ※ 전</u>
₽ JS
```

roofs of a peac affrightedly at people were st the farmer and

<u> ※ 전</u>

At noon he wa et of Nir, which he had once visited and which marked his farthest for n afterward he came to the great stone bridge across the d a living human sacrifice when they built it thirteen-Skai, into who requent presence of cats (who all arched their backs at hundred years the trailing Zoogs) reveal significant law, no man m cottages and neatly fence er was the quaint town itself, with its old peaked roofs nney-pots and narrow hill streets where one can see old and overhanging upper st 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.

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



d at a farmhouse well for a cup of water, and all the dogs barked that crept through the grass behind. At another house, where about the gods, and whether they danced often upon Lerion; but the Elder Sign and tell him the way to Nir and Ulthar.



of Ulthar; for in Ulthar, according to an ancient and t were the suburbs of Ulthar, with their little green











# 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:

» rtl: right-to-left, as in Arabic or Hebrew

# » ltr: left-to-right, as in English, Spanish, or Russian



writing-mode: horizontal-tb;

direction: ltr;

# Arabic-based



writing-mode: horizontal-tb;

direction: rtl;

# Mongolian-based



writing-mode: vertical-lr;

# Han-based



# writing-mode: vertical-rl





# Start edges: top & left

# End edges: bottom & right

# Arabic-based



# Start edges: top & right

End edges: bottom & left

# Mongolian-based



Start edges: top & left

End edges: bottom & right

# Han-based



# Start edges: top & right

End edges: bottom & left









# **Block axis: vertical** Inline axis: horizontal

# Arabic-based



# Block axis: vertical

Inline axis: horizontal

# Mongolian-based



Block axis: horizontal

Inline axis: vertical

# Han-based



Block axis: horizontal

Inline axis: vertical







# 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



### Outlook

Email and calendar together. All you need to be your most productive and connected self —at home, on the go, and everywhere in between.

### Learn more >



### Xbox

Play your favorite games in more places than ever. Easily access your games, friends, and community across Xbox One, Windows 10 PC, and mobile.



### Skype

Skype's text, voice and video make it simple to get closer to the people who matter most across all of your devices.

### Learn more >

# 0

### Office

Achieve what matters to you with Word, Excel, PowerPoint, and more. What will you do with your next 365?

### Learn more >

Learn more >



### Microsoft Edge

The faster way to get things done on the web with built-in features for staying organized, researching, and discovering.

### Learn more >

# 6

### Bing

Intelligent search features make it quick and easy to find what you need – answers, news, entertainment, and more.

### Learn more >



### OneDrive

Safely store and access your files and photos on all your devices. Your Microsoft account comes with 5GB of storage and the option to add more when you need it.



### Windows

Find, lock, or erase a lost or stolen Windows 10 device, schedule a repair, and get support.

Learn more >

Learn more >





### Microsoft Edge

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

למידע נוסף <



### Bing

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

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



### Windows

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

### למידע נוסף



### Outlook

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

### למידע נוסף <



### Skype

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

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 <

٦

### Office

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





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-blockend-width • border-block-start • border-block-start-color • border-block-start-style • border-block-start-width • border-block-style • border-block-width • border-endend-radius • border-end-start-radius • border-inline • border-inline-color • borderinline-end • border-inline-end-color • border-inline-end-style • border-inline-endwidth • border-inline-start • border-inline-start-color • border-inline-start-style • border-inline-start-width • border-inline-style • border-inline-width • borderstart-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-blockstart • 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 • scrollmargin-inline-end • scroll-margin-inline-start

logical properties:

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

There are also *many* logical values as well!

# To sum up, these are the things you can control with



# 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

ed artially supported ted ted

## 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 center
- 3. *Distributed* focuses on distributing space among stretch

with relation to their container, e.g., start, end,

2. *Baseline* focuses on lining text up along the same baseline no matter how big the text is, e.g., baseline aligned boxes, e.g., space-around, space-between,

### Positional

Dunwich Horror

### Distributed

**Dunwich Horror** 

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  $\uparrow$ 

like Japanese or Chinese

## These axes are reversed on pages using languages

# Multi-Column

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 farrous sinal resolve projector
- 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:



### 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 🛩

	<ul> <li>Formatting &amp; beautifying code</li> </ul>	
ha	<ul> <li>Minimizing code</li> </ul>	
	<ul> <li>WYSIWYG Web tools</li> </ul>	
MP & MAMP)	<ul> <li>Automating my Mac</li> </ul>	
	<ul> <li>Programming fonts</li> </ul>	
ps	<ul> <li>Using Word to make webpages</li> </ul>	
nail addresses	<ul> <li>Pattern libraries</li> </ul>	
	<ul> <li>The WebSanity Toolkit</li> </ul>	
timedia	• jQuery	

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 count & other CSS properties (default)

# » auto: width of the column determined by column-

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>

earlier; e.g., none, dotted, solid, & so on

Orthick

- column-rule-style value is same as <border-style>
- column-rule-width value is <length> Or thin, medium,

*	HTML
	<h1>Metasyntactic Variables</h1>
2 .	<div></div>
	<ol></ol>
4	<li>foo</li>
5	<li>bar</li>
6	<li>baz</li>
7,	<li>qux</li>
8	<li>quux</li>
9,	<li>corge</li>
10,	<li>sprault</li>
	<li>garply</li>
12 .	<li>&gt;waldo</li>
	<li>fred</li>
14 .	<li>&gt;plugh</li>
15 -	<li>xyzzy</li>
16 .	<li>thud</li>
17 .	<li>mos</li>
18 .	<li>henk</li>
19.	-li\dof/li\
\$	CSS
	ol {
2	column-count: 4;
3	column-width: 150px;
4	column-gap: 5rem;
5	column-rule: 2px dotted gray;
6	}

### **Metasyntactic Variables**

1. foo

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- 2. bar
- 3. baz
- 4. qux
- 5. quux
- 6. corge

~

- 7. grault
- 8. garply
- 9. waldo
- 10. fred
- 11. plugh
- 12. xyzzy

13. thud 14. mos 15. henk 16. def

#### \* HTML

	<ul class="multi-column"></ul>
2 •	<li>Abhoth</li>
	<li>Aiueb Gnshal</li>
4.	<li>Aletheia</li>
5.	<li>Azathoth</li>
6.	<li>Azhorra-Tha</li>
7.	<li>B'gnu-Thun</li>
8 -	<li>Bokrug</li>
9.	<li>C'thalpa</li>
10 -	<li>Cthulhu</li>
	<li>Cxaxukluth</li>
	<li>D'endrrah</li>
	<li>Dagon</li>
14 -	<li>Daoloth</li>
15 -	<li>Darkness</li>
16.	<li>&gt;Deep One</li>
17 •	<li>&gt;Dunwich Horror</li>
<b>‡</b>	CSS (SCSS) Compiled
	.multi-column {
	column-count: 4:
	column-width: 170px;
4	column-gap: 40px;
	column-rule-color: silver;
	column-rule-style: solid;
	column-rule-width: 2px;

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

Dunwich Horror

8 }

 $\sim$ 

#### Gnoph-Keh

Hound of Tindalos

Hunting Horror

Ialdagorth

Kaajh'Kaalbh

Kthanid

Lu-Kthu

Mh'ithrha

Mi-go

Mlandoth and Mril Thorion

Mother Hydra

Mother of Pus

Ngyr-Korath

Nightgaunt

Nodens

Oryx

Oztalun

Rhan-Tegoth

Shabbith-Ka

Shaggai

Shathak

Shavalyoth

Shoggoth

Shub-Niggurath

Spider of Leng

Star Mother

Suc'Naath

The Blackness from the Stars

The Cloud-Thing

The Hydra

Tsathoggua

Tulzscha

Ubbo-Sathla

Ulthar

Uvhash

Vorvadoss

Xa'ligha

Xexanoth

Yad-Thaddag

Yaggdytha

Ycnàgnnisss

Yhoundeh

Yibb-Tstll

Yidhra

Yig

Vog Sathath

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g	
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57	
54	



Container no longer wide enough to handle 4 columns at least 170px wide container is now less than 4×170px (column-width) + 3×40px (gap)

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



×

#### Lu-Kthu

Mh'ithrha

Mi-go

Mlandoth and Mril Thorion

Mother Hydra

Mother of Pus

Ngyr-Korath

Nightgaunt

Nodens

Ny-Rakath

Nyarlathotep

Nyctelios

Olkoth

Oryx

Oztalun

The Blackness fr Stars

The Cloud-Thing

The Hydra

The Nameless M

Thunn'ha

Tru'nembra

Tsathoggua

Tulzscha

Ubbo-Sathla

Ulthar

Uvhash

Vorvadoss

Xa'ligha

Xexanoth

Yad-Thaddag

om the	
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list	
	1

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

>Dunwich Horror

ul class="multi-column">

#### CSS (SCSS) Compiled

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

#### Abhoth

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V

Aiueb Gnshal

Aletheia

Azathoth

Azhorra-Tha

B'gnu-Thun

Bokrug

C'thalpa

Cthulhu

Cxaxukluth

D'endrrah

Dagon

Daoloth

Darkness

Deep One

Dunwich Horror

Oryx

Oztalun

Rhan-Tegoth

Shabbith-Ka

Shaggai

Shathak

Shavalyoth

Shoggoth

Shub-Niggurath

Spider of Leng

Star Mother

Suc'Naath

The Blackness from Stars

The Cloud-Thing

The Hydra

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¢ }	HTML
1 • 2 • 3 • 4 •	<ul> <li><ul class="multi-column"></ul></li> <li><li>Abhoth</li> <li><li>Aiueb Gnshal</li> <li><li>Aletheia</li> </li></li></li></ul>
57	Container no longer wide e
7 7 8 7 9 7	handle 2 columns at least 1
07 17	-container is now less that
2 T 3 T 4 T	( <pre>clip endrom</pre> /li> (column-width) + 40px (ga /lip alloche/lip
.5 • .6 • .7 •	<li>&gt;Darkness</li> <li>&gt;Deep One</li> <li>&gt;Dunwich Horror</li>
¢ (	CSS (SCSS) Compiled
1 ▼ 2 3 4 5 6	<pre>.multi-column {    column-count: 4;    column-width: 170px;    column-gap: 40px;    column-rule-color: silver;    column-rule-style: solid;</pre>
	column-rule-width: 2px;

8 }

#### $\sim$

## enough to 170px wide an 2×170px ap)

~

 $\sim$ 

#### Abhoth

Aiueb Gnshal

Aletheia

Azathoth

Azhorra-Tha

B'gnu-Thun

Bokrug

C'thalpa

Cthulhu

Cxaxukluth

D'endrrah

Dagon

Daoloth

Darkness

Deep One

Dunwich Horror

1
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1
-

column-span

<h2>

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

### Allows an element to span across all columns, e.g.,

column-fill

## Specifies whether content is equally divided across multiple columns

### Values:

- (default)

» auto: Content is not equally divided across columns » balance: Content is equally divided among columns



- divided
- divided

### SIDE NOTE

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



#### \* HTML

1 <div class="multi-column"> <h1>H.P. Lovecraft Short Story Excerpts</h1> <h2><cite>The Shadow Out of Time</cite> (1936)</h2> 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 chita of the fancies promoted by

 $\mathbf{v}$ 

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#### CSS (SCSS) Compiled

```
.multi-column {
     columns: 250px 2;
     column-gap: 2em;
     column-fill: balance;
    .multi-column h1, .multi-column h2 {
     column-span: all;
   .multi-column p {
     margin: 0;
     text-indent: 1.5em;
* JS
                                         \sim
```

## 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



					iOS		
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





## Widows & orphans?!



## *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





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

## at the bottom of a page

Orphan: first line of a paragraph that appears by itself

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

## used by the rendering engine to:

- generate
- the boxes
- » Use the box model to size the boxes
- boxes

The CSS visual formatting model is an algorithm

» Use the DOM & CSSOM to figure out what boxes to

» Use the formatting context to determine the layout of

» Use positioning schemes to adjust placement of the
### Thank you!

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jans@websanity.com websanity.com

# CSS Visual Formatting Model Box Generation & Positioning Schemes

#### R. Scott Granneman & Jans Carton

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3.1

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 substatially, & moved widows & orphans there; updated height, width, & related properties & values compatibility charts; updated many other things

into their own slide decks!; updated overflow screenshots; <percentage> with padding & margin compatibility table; re-did all float & clear screenshots & added margins; mentioned border-behavior

# 2018-10-12 3.0: (con't. from 4) ...moved Flexbox & Grid

- relates to width of containing block; updated position
- radius; added slides on changing <display> to change

2018-10-12 3.0: (con't. from 4) ... 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-ofnormal flow; Moved Visibility & Opacity to the Decorating *with CSS* slide deck; (con't. ^)...

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. 1)...

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!

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: ; 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

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 boxsizing: 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

2016-01-10 2.3: Added lots 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

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

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

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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