

A solution for
the visual and
source order
disconnect

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The screenshot shows a web browser window with the following elements:

- Browser Tab:** "Giving Content Priority with C x +"
- Address Bar:** "24ways.org/2012/css3-grid-layout/"
- Page Header:** "24 WAYS to impress your friends" with a hamburger menu icon on the right.
- Author Profile:** A diamond-shaped portrait of Rachel Andrew on the left.
- Article Title:** "Giving Content Priority with CSS3 Grid Layout" in large, bold, black font.
- Author Name:** "Rachel Andrew" in a smaller blue font below the title.
- Metadata:** On the left side, below the author's name, it says "18 December 2012", "Published in Code", and "7 comments".
- Text:** The main body of the article begins with the text: "Browser support for many of the modules that are part of CSS3 have enabled us to use CSS for many of the things we used to have to use images for. The rise of mobile browsers and the concept of responsive web design has given us a whole new way of looking at design for the web. However, when it comes to layout, we haven't moved very far at all. We have talked for years about separating our content and source order from the presentation of that content, yet most of us have had to make decisions on source order in order to get a certain visual layout." It continues with: "Owing to some interesting specifications making their way through the W3C process at the moment, though, there is hope of change on the horizon. In this article I'm going to look at some CSS3 modules, the CSS3 grid layout module, that will help to fix..."

24ways.org/2012/css3-grid-layout

 **Baseline** Widely available



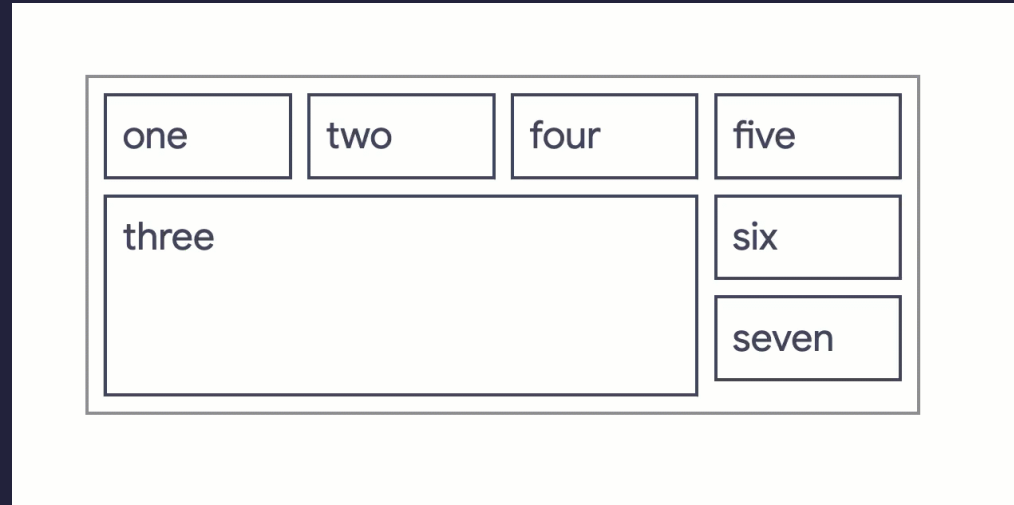
CSS Grid, Baseline Widely available since January 2023

Without subgrid we create the potential for accessibility problems. Authors may remove semantic markup in order to use grid layout.

Slide from 2015 CSS Day grid talk

```
.grid a:nth-child(3) {  
  grid-column: span 3;  
  grid-row: span 3;  
}
```

```
.grid {  
  display: grid;  
  grid-auto-flow: dense;  
  grid-template-columns: repeat(4,1fr);  
}
```



Here's a cool thing

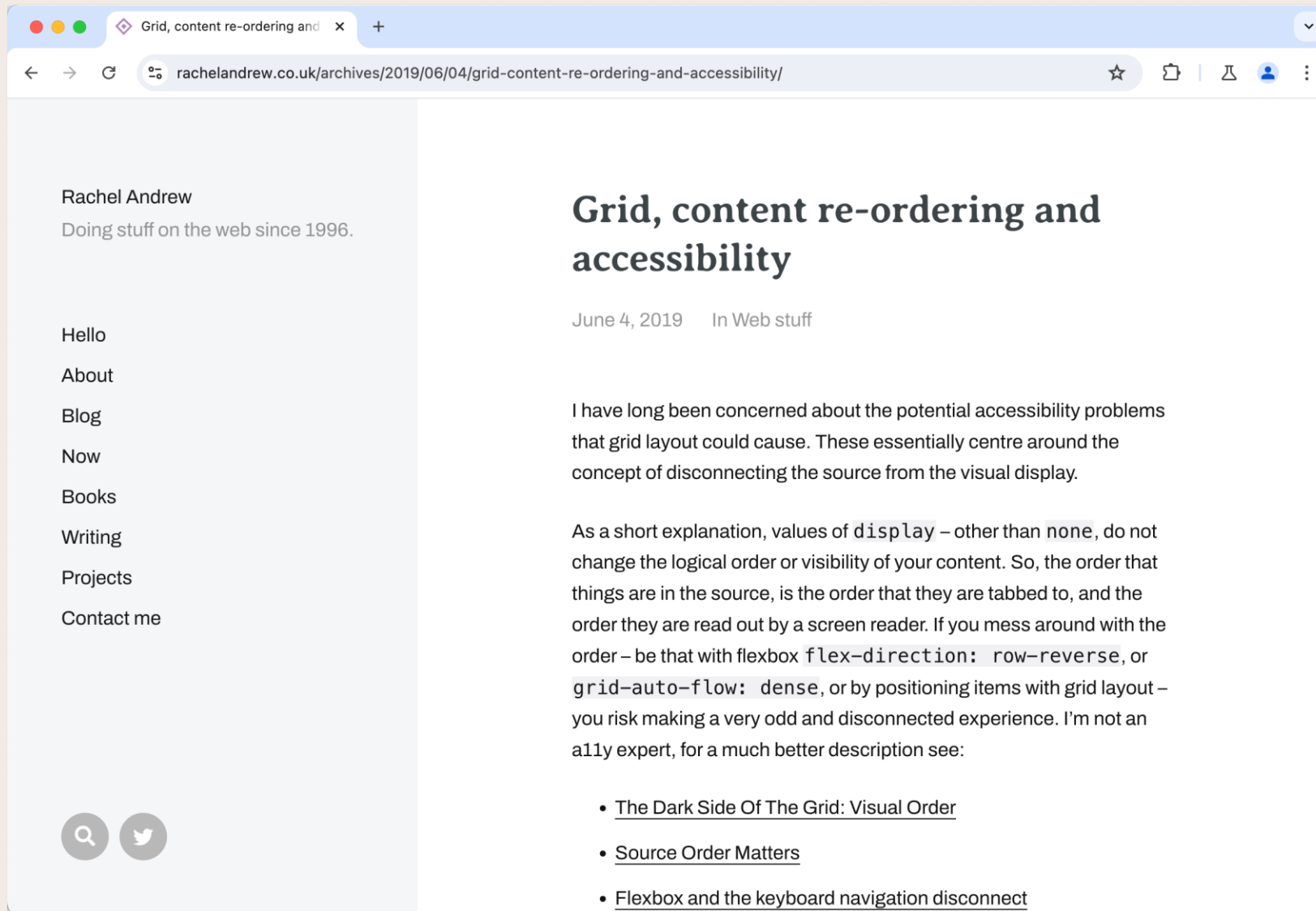
Please don't use it.

CSS Grid Level 1

Correct source order is important for speech, for sequential navigation (such as keyboard navigation), and non-CSS UAs such as search engines, tactile browsers, etc. Grid placement *only* affects the visual presentation! This allows authors to optimize the document source for non-CSS/non-visual interaction modes, and use grid placement techniques to further manipulate the visual presentation so as to leave that source order intact.

Separating content from presentation

Something we've tried to do since the early days of CSS layout.



<https://rachelandrew.co.uk/archives/2019/06/04/grid-content-re-ordering-and-accessibility/>

Browser address bar: github.com/w3c/csswg-drafts/issues/5675

Repository: **w3c / csswg-drafts** (Public)

Navigation: Code | **Issues** 3.2k | Pull requests 79 | Actions | Projects 17 | Security | Insights

[css-grid] Masonry layout in CSS Grid 3 has potential to cause accessibility problems with reading order. #5675

New issue

Open nattarnoff opened this issue on Oct 28, 2020 · 12 comments

nattarnoff commented on Oct 28, 2020

Assuming all authors code their masonry grid in a valid reading order, screen reader user who are non-visual will have no problem with it. But once we introduce visual screen reader users, low vision with no assistance, magnification software users, and users with cognitive problems, the layout begins to cause problems in focus order and reading order.

If we have

```
<div>
<item>The quick</item>
<item>brown fox</item>
<item>jumped</item>
<item>over</item>
<item>the lazy</item>
<item>dog</item>
</div>
```

The screen reader user will hear "the quick brown fox jumped over the lazy dog." When we add the CSS and visual layout, the reading order could be realistically be:

Assignees
No one assigned

Labels
css-grid-3 topic: masonry

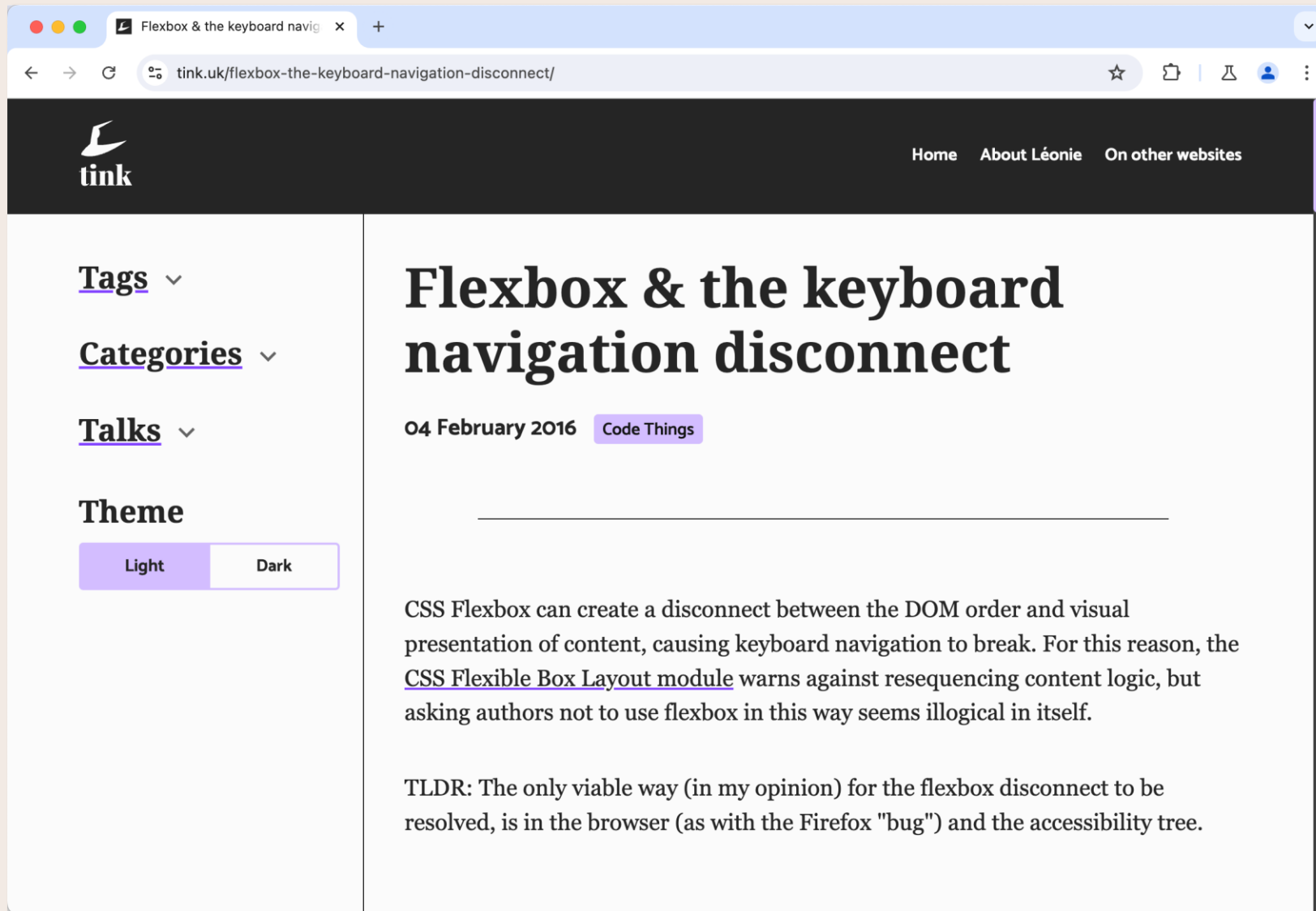
Projects
None yet

Milestone
No milestone

Development
No branches or pull requests

9 participants

<https://github.com/w3c/csswg-drafts/issues/5675>



<https://tink.uk/flexbox-the-keyboard-navigation-disconnect/>

reading-flow

CSS Display Level 4

Can we just opt into the order that flex or grid items are laid out?

Reading or visual order is subjective



`flex-direction: row-reverse`

In most cases DOM order is
what you want

No universal switch to let developers forget about source order.

Scoped to particular layout methods

We're not trying to do this on block layout.

reading-flow: normal

Follow the order of items in the DOM. The initial value.

```
.flex {  
  display: flex;  
  flex-direction: row-reverse;  
}
```



normal
flex-flow
flex-visual
grid-rows
grid-columns
grid-order

Values for reading-flow

reading-flow: flex-visual

Follow the visual layout, taking writing mode and direction into account.

```
.flex {  
  display: flex;  
  flex-direction: row-reverse;  
  reading-flow: flex-visual;  
}
```



reading-flow: flex-flow

Follow the flow order.


```
.flex {  
  display: flex;  
  flex-direction: row-reverse;  
  reading-flow: flex-flow;  
}
```



Adding the order property

The reading flow now takes into account the modification made by order.

```
.flex a:nth-child(3) {  
  order: -1;  
}
```

```
.flex {  
  display: flex;  
  flex-direction: row-reverse;  
  reading-flow: normal;  
}
```



```
.flex a:nth-child(3) {  
  order: -1;  
}
```

```
.flex {  
  display: flex;  
  flex-direction: row-reverse;  
  reading-flow: flex-visual;  
}
```



```
.flex a:nth-child(3) {  
  order: -1;  
}
```

```
.flex {  
  display: flex;  
  flex-direction: row-reverse;  
  reading-flow: flex-flow;  
}
```



Grid and reading flow

Automatic layout—grid-auto-flow: dense

one

two

three

four

five

six

seven

one

two

four

five

three

six

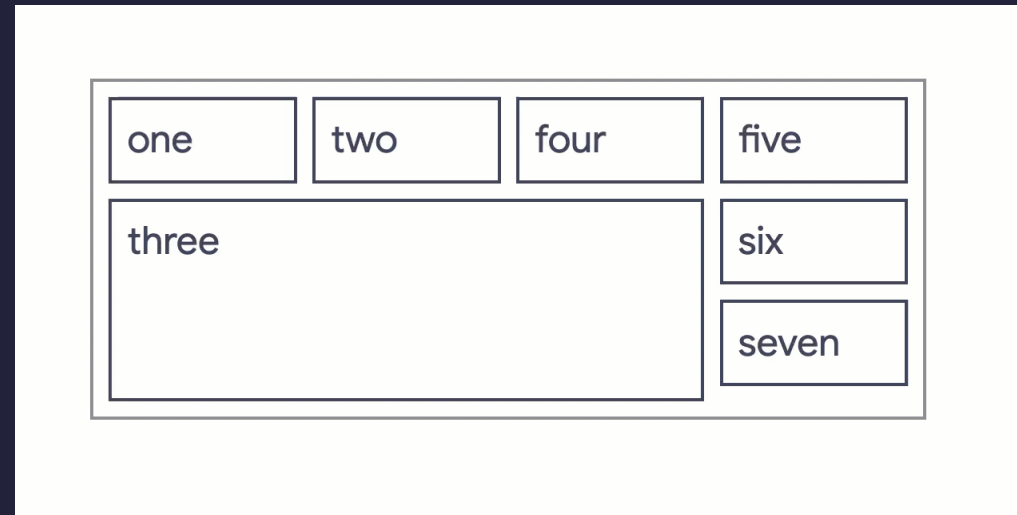
seven

reading-flow: grid-rows

Follow the reading order by row.

```
.grid a:nth-child(3) {  
  grid-column: span 3;  
  grid-row: span 3;  
}
```

```
.grid {  
  display: grid;  
  grid-auto-flow: dense;  
  grid-template-columns: repeat(4,1fr);  
  reading-flow: grid-rows;  
}
```



reading-flow: grid-columns

Follow the reading order by column.

one

two

five

three

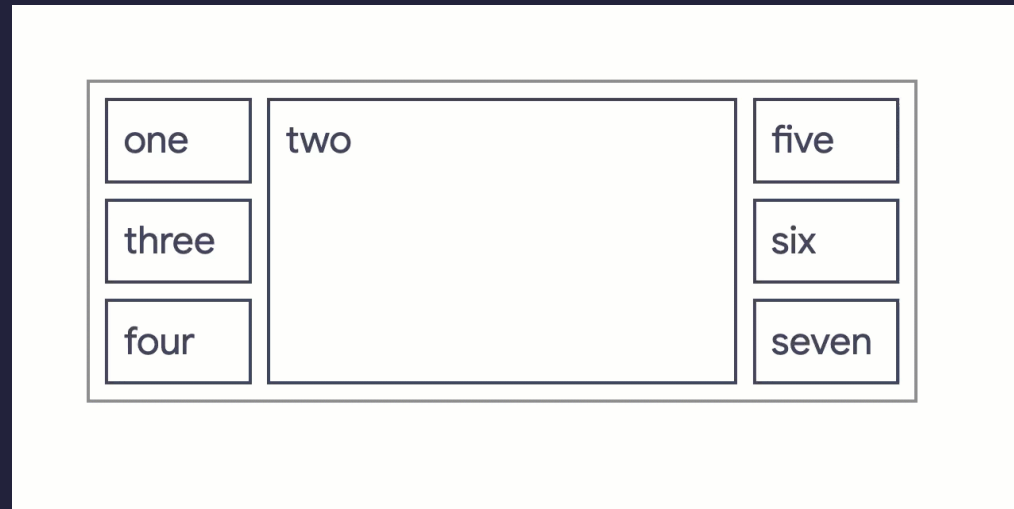
six

four

seven

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

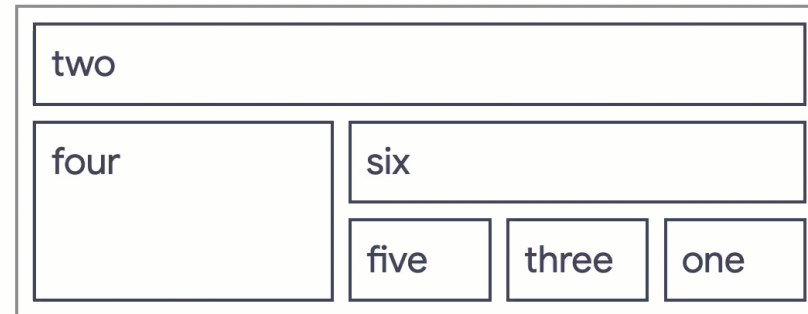
```
.grid {  
  display: grid;  
  grid-auto-flow: column dense;  
  grid-template-columns: repeat(5,1fr);  
  reading-flow: grid-columns;  
}
```



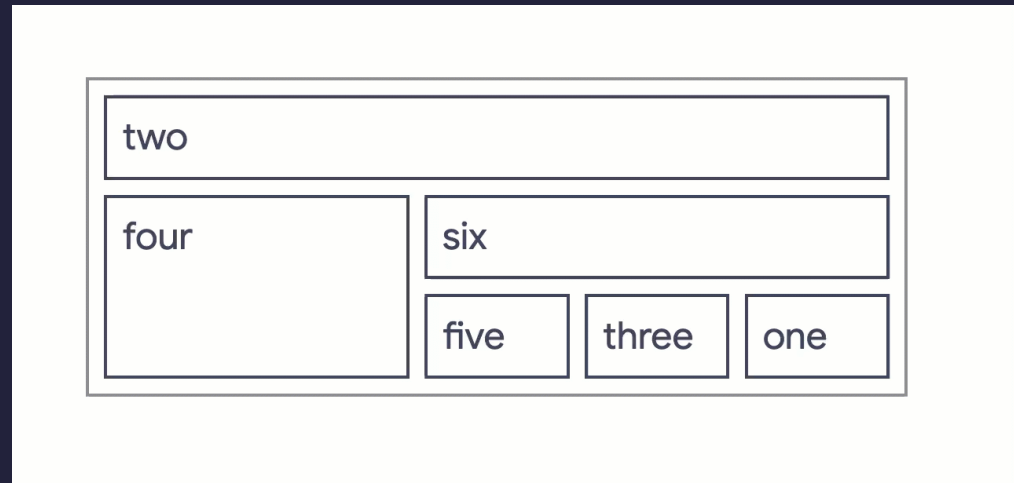
Grid and reading flow

Line-based placement, grid-template-areas

```
.grid {  
  display: grid;  
  grid-template-columns: repeat(5,1fr);  
  grid-template-areas:  
    "b b b b b"  
    "d d f f f"  
    "d d e c a";  
}
```



```
.grid {  
  display: grid;  
  grid-template-columns: repeat(5,1fr);  
  grid-template-areas:  
    "b b b b b"  
    "d d f f f"  
    "d d e c a";  
  reading-flow: grid-rows;  
}
```



reading-flow: grid-order

As normal, but take the order property into account.

two

four

six

five

three

one

The reading-order property

For the children of a reading flow container.



Feeding the Bird
American 19th Century

oil on canvas
Not on View

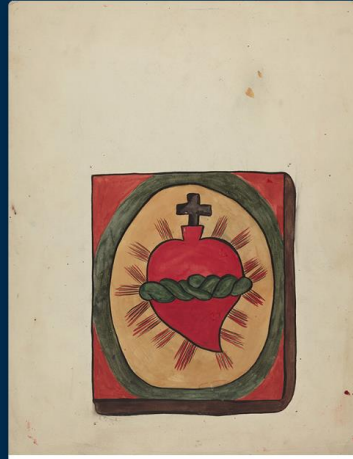
1800
1953.5.63



Keelmen Heaving in
Coals by Moonlight
Joseph Mallord William Turner

oil on canvas
West Building, Main Floor
Gallery 57

1835
1942.9.86



Retablo
E. Boyd

watercolor, colored pencil
Not on View

1935
1943.8.6831



Painted Chest
Majel G. Claflin



National Gallery of Art

The National Gallery of Art is an art museum in Washington, D.C., United States, located on the National Mall, between 3rd and 9th Streets, at Constitution Avenue NW.

Open to the public and free of charge, the museum was privately established in 1937 for the American people by a joint resolution of the United States Congress.

[Visit](#)

```
.grid a:nth-child(3) {  
  grid-column: span 3;  
  grid-row: span 3;  
}
```

```
.grid {  
  display: grid;  
  grid-auto-flow: dense;  
  grid-template-columns: repeat(4,1fr);  
  reading-flow: grid-rows;  
}
```

```
.grid a:nth-child(5) {  
  grid-column: 4;  
  grid-row: 1;  
  grid-order: -1;  
}
```



Source order is important

Never use reading-flow to avoid the work of updating your HTML.

Create a sensible document

Then consider small tweaks to optimize the reading experience at different breakpoints.

Try it out in Chrome Canary

<https://chrome.dev/reading-flow-examples>

Questions?

Rachel Andrew

<https://noti.st/rachelandrew/Aj6atb/>