Advanced Design Systems Considerations

JSConf Hawaii 2020

Colors   Palette [Stripe colors ⇅]   [Reset] [↓ Sketch Palette] [📋 Copy CSS]

Stripe colors   🔒 ↻ ✕
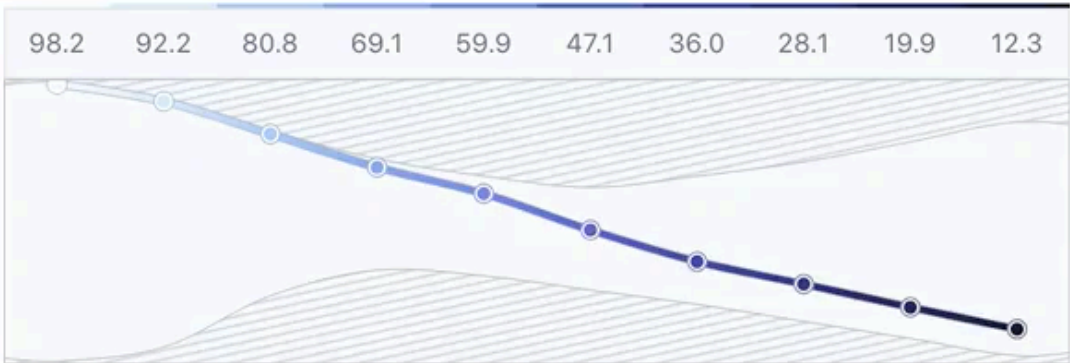
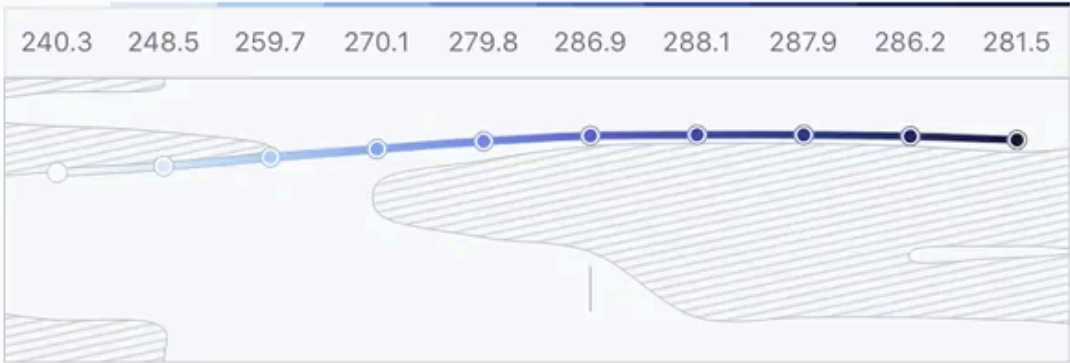|	50	100	200	300	400	500	600	700	800	900
Gray	4.61	3.92	2.89	2.11	1.53	1.01	1.51	2.06	2.73	3.36
Blue	4.63	3.98	2.93	2.08	1.55	4.83	1.51	2.02	2.68	3.34
Cyan	4.62	3.98	2.86	2.13	1.51	1.03	1.51	2.03	2.70	3.38
Green	4.65	3.99	2.85	2.11	1.55	1.00	1.52	2.08	2.70	3.36
Yellow	4.57	3.89	2.87	2.06	1.54	1.02	1.51	2.05	2.70	3.35
Orange	4.64	3.90	2.81	2.11	1.54	1.02	1.50	2.07	2.72	3.34
Red	4.60	3.94	2.84	2.00	1.49	1.02	1.52	2.08	2.70	3.35
Purple	4.63	3.94	2.84	2.09	1.52	1.01	1.51	2.07	2.71	3.31
Violet	4.60	3.93	2.84	2.08	1.53	1.02	1.52	2.07	2.73	3.34

Overlay [WCAG contrast ⇅]

Blue   ↻ ✕

50 100 200 300 400 500 600 700 800 900

Lightness

| 98.2 | 92.2 | 80.8 | 69.1 | 59.9 | 47.1 | 36.0 | 28.1 | 19.9 | 12.3 |

Chroma

| 3.0 | 12.7 | 29.3 | 43.8 | 54.2 | 61.7 | 56.3 | 47.5 | 35.7 | 24.2 |

Hue

| 240.3 | 248.5 | 259.7 | 270.1 | 279.8 | 286.9 | 288.1 | 287.9 | 286.2 | 281.5 |

500   ↻ ✕

Gray Blue Cyan Green Yellow Orange Red Purple Violet

Lightness

| 48.1 | 47.1 | 48.1 | 47.9 | 49.0 | 49.1 | 49.1 | 48.0 | 47.8 |

Chroma

| 11.8 | 61.7 | 42.7 | 40.0 | 69.9 | 62.3 | 60.2 | 60.7 | 56.6 |

Hue

| 267.2 | 286.9 | 255.1 | 163.7 | 55.5 | 39.7 | 11.5 | 320.2 | 302.7 |

Rocket Rides ▾

🔍 Search...
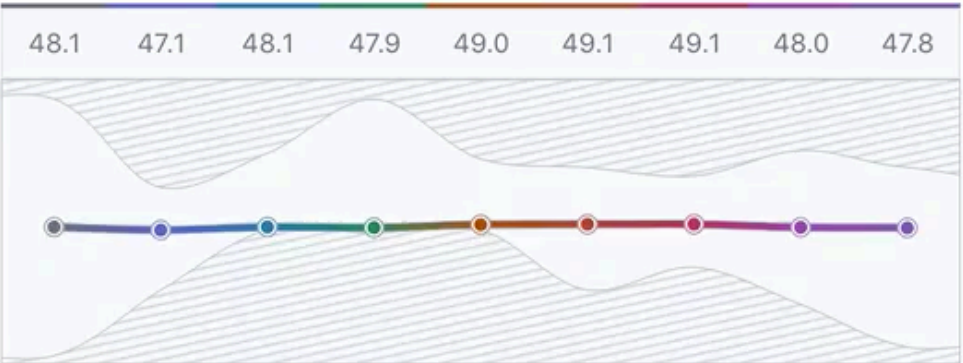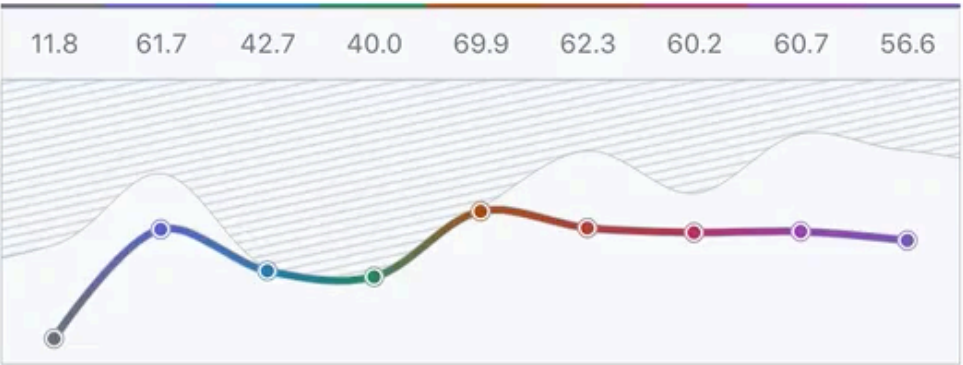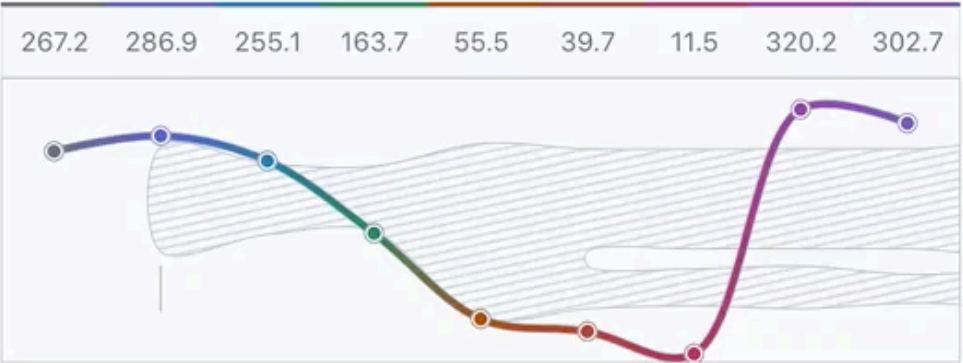
- 🏠 Home
- 📷 Payments
- ↕ Balance
- ⊙ Customers

- ◑ Radar
- ◕ Sigma
- ◉ Billing
- ◐ Connect
  - **Accounts**
  - Transfers
  - Collected fees
  - Settings
- 🛒 Orders

- ▮ Developers
- ⬤ View test data

- 🏪 Business settings

▤ Connected account   acct_1BLeTM439Xkh4w0nw

Charles Wu [VERIFIED]   ···

Payments	Payouts	Total balance	Lifetime volume
✓ Enabled	✓ Manual	$300.00 USD ⓘ	$6,400.50 USD ⓘ

Identity   ✎ Edit

Name	Charles Wu	Email address	charles.wu@yahoo.com
Date of birth	04/25/1986	Phone number	Not provided
SSN	Provided	Address	185 Berry St. Suite 550
Identity document	Not provided		San Francisco, CA 94107 🇺🇸

Balance   ↕ Send funds   ···

Total balance	Available to pay out	Available soon	In transit to bank
$300.00	$150.00	$100.00	$50.00

Activity

Payments   Transfers   **Payouts**   Collected fees

AMOUNT	BANK ACCOUNT	ESTIMATED ARRIVAL	ID	DATE INITIATED
$50.00 USD ↗	Citibank ··· 7412	Expected Jun 15, 2018	po_25032Zq9BF2345	Jun 13, 2018 3:45 PM

National Aeronautics and
Space Administration

Graphics Standards Manual

NASA
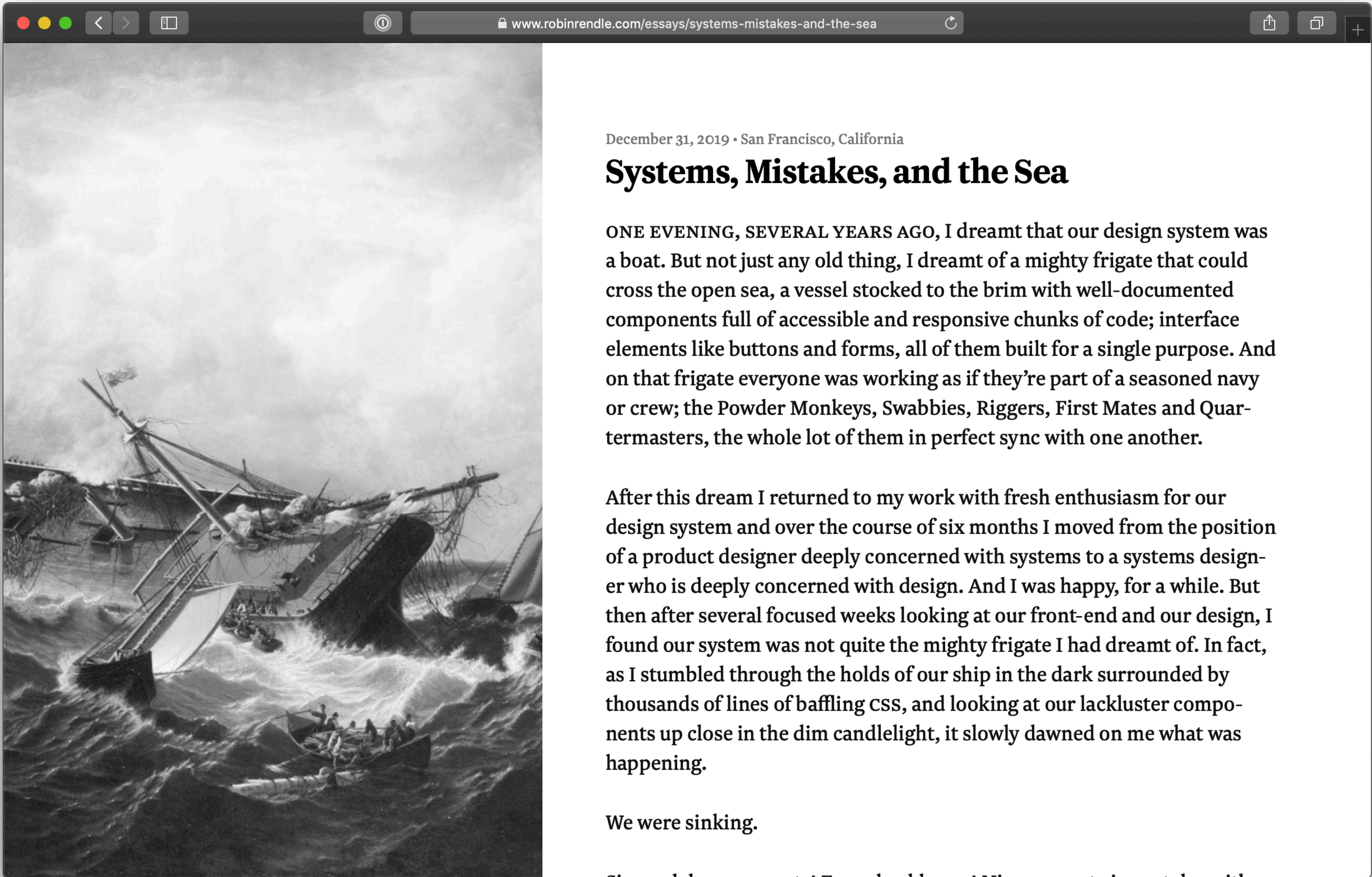
December 31, 2019 • San Francisco, California

Systems, Mistakes, and the Sea

ONE EVENING, SEVERAL YEARS AGO, I dreamt that our design system was a boat. But not just any old thing, I dreamt of a mighty frigate that could cross the open sea, a vessel stocked to the brim with well-documented components full of accessible and responsive chunks of code; interface elements like buttons and forms, all of them built for a single purpose. And on that frigate everyone was working as if they're part of a seasoned navy or crew; the Powder Monkeys, Swabbies, Riggers, First Mates and Quartermasters, the whole lot of them in perfect sync with one another.

After this dream I returned to my work with fresh enthusiasm for our design system and over the course of six months I moved from the position of a product designer deeply concerned with systems to a systems designer who is deeply concerned with design. And I was happy, for a while. But then after several focused weeks looking at our front-end and our design, I found our system was not quite the mighty frigate I had dreamt of. In fact, as I stumbled through the holds of our ship in the dark surrounded by thousands of lines of baffling CSS, and looking at our lackluster components up close in the dim candlelight, it slowly dawned on me what was happening.

We were sinking.

> " ...a thing that surrounds us, envelops and entangles us, but that is literally too big to see in its entirety. Mostly, we perceive hyper objects through their influence on other things – a melting ice sheet, a dying sea, the buffeting of a transatlantic flight. Hyperobjects happen everywhere at once, but we can only experience them in the local environment. [...] in fact, they stand outside both our perception and our measurement. They exist without us. Because they are so close and yet so hard to see, they defy our ability to describe them rationally, and to master or overcome them in a traditional sense. Climate change is a hyperobject, but so is nuclear radiation, evolution, and the internet.

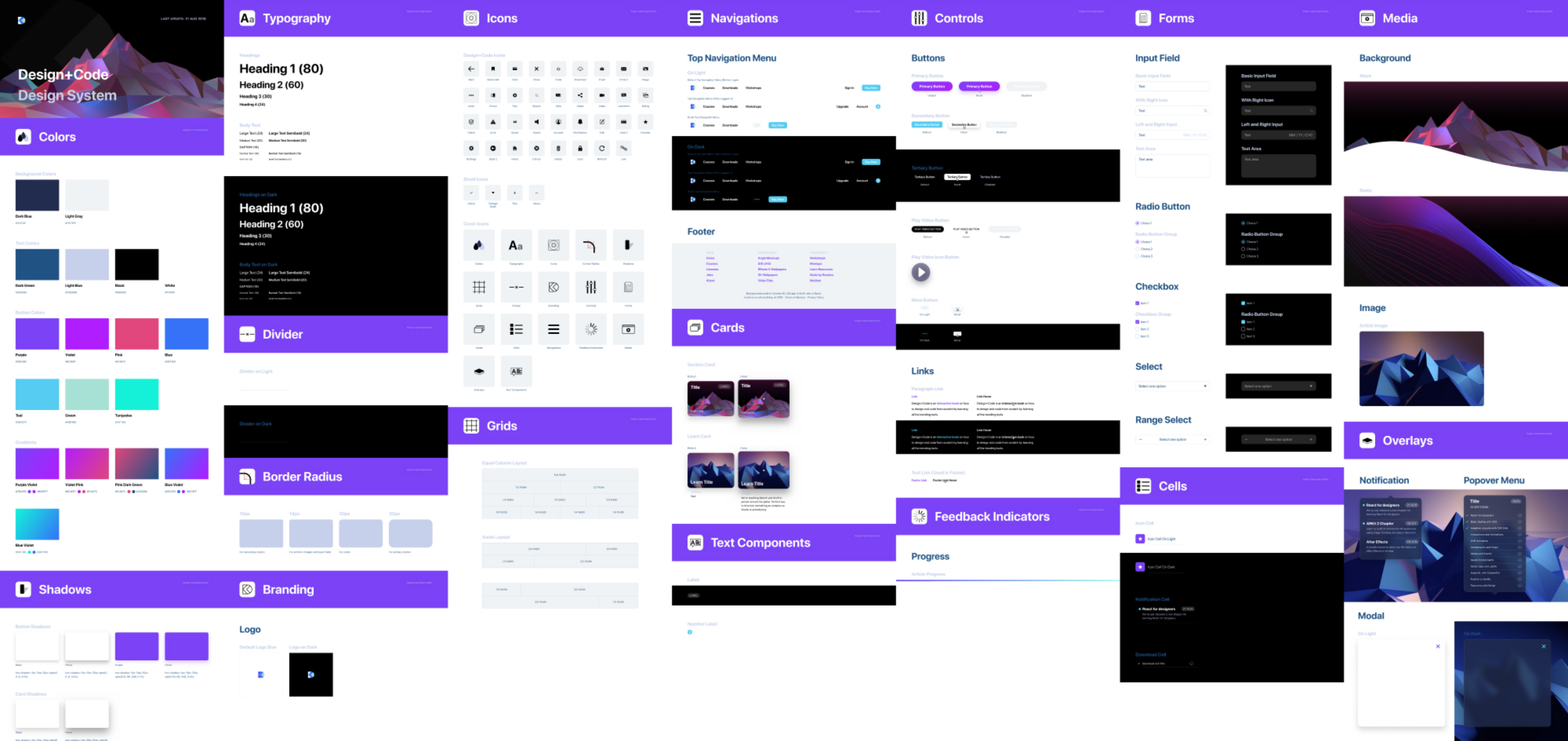*James Bridle, The New Dark Age*

systems
of
systems

Prior art

Design+Code
Design System

Colors

Background Colors
Dark Blue · Light Gray

Text Colors
Dark Green · Light Blue · Black · White

Button Colors
Purple · Violet · Pink · Blue
Teal · Green · Turquoise

Gradients
Purple Violet · Violet Pink · Pink Dark Green · Blue Violet
Blue Violet

Shadows

Button Shadows

Card Shadows

Typography

Headings
Heading 1 (80)
Heading 2 (60)
Heading 3 (30)
Heading 4 (24)

Body Text
Large Text (34) · Large Text Semibold (34)
Medium Text (20) · Medium Text Semibold (20)
CAPTION (16)
Normal Text (16) · Normal Text Semibold (16)

Headings on Dark
Heading 1 (80)
Heading 2 (60)
Heading 3 (30)
Heading 4 (24)

Body Text on Dark
Large Text (34) · Large Text Semibold (34)
Medium Text (20) · Medium Text Semibold (20)
CAPTION (16)
Normal Text (16) · Normal Text Semibold (16)

Divider

Divider on Light

Divider on Dark

Border Radius

10px · 14px · 20px · 30px

Branding

Logo

Default Logo Size · Logo on Dark

Icons

Design+Code Icons

Small Icons

Cover Icons
Colors · Typography · Icons · Corner Radius · Shadows
Grids · Divider · Branding · Controls · Forms
Cards · Cells · Navigations · Feedback Indicators · Media
Overlays · Text Components

Grids

Equal Column Layout
Full Width
1/2 Width
1/3 Width
1/4 Width

Aside Layout

Navigations

Top Navigation Menu

On Light
Courses · Downloads · Workshops · Sign In · Buy Now
Courses · Downloads · Workshops · Upgrade · Account
Courses · Downloads · Buy Now

On Dark
Courses · Downloads · Workshops · Sign In · Buy Now
Courses · Downloads · Workshops · Upgrade · Account
Courses · Downloads · Buy Now

Footer

Home · Angle Mockup · Workshops
Courses · iOS UIKit · Mockups
Licenses · iPhone X Wallpapers · Learn Resources
Jobs · 5K Wallpapers · Made by Readers
About · Video Files · Medium

Cards

Section Card
Default · Hover
Title LABEL · Title LABEL

Learn Card
Default · Hover
Learn Title · Learn Title

Text Components

Label
LABEL

Number Label

Controls

Buttons

Primary Button
Primary Button · Primary Button
Default · Hover · Disabled

Secondary Button
Secondary Button · Secondary Button
Default · Hover · Disabled

Tertiary Button
Tertiary Button · Tertiary Button
Default · Hover · Disabled

Play Video Button
PLAY VIDEO BUTTON · PLAY VIDEO BUTTON
Default · Hover · Disabled

Play Video Icon Button

More Button

Links

Paragraph Link
Link · Link Hover

Link
Design+Code is an interactive book on how to design and code from scratch by learning all the trending tools.

Text Link (Used in Footer)
Footer Link · Footer Light Hover

Feedback Indicators

Progress

Article Progress

Forms

Input Field

Basic Input Field
Text

With Right Icon
Text

Left and Right Input
Text

Text Area
Text area

Basic Input Field
Text

With Right Icon
Text

Left and Right Input
Text · MM / YY / CVC

Text Area
Text area

Radio Button
Choice 1
Radio Button Group
Choice 1
Choice 2
Choice 3

Checkbox
Item 1
Checkbox Group
Item 1
Item 2
Item 3

Select
Select one option

Range Select

Cells

Icon Cell
Icon Cell On Light

Icon Cell On Dark

Notification Cell

Download Cell

Media

Background
Wave · Dots

Image
Article Image

Overlays

Notification · Popover Menu

Modal
On Light · On Dark

Blend in
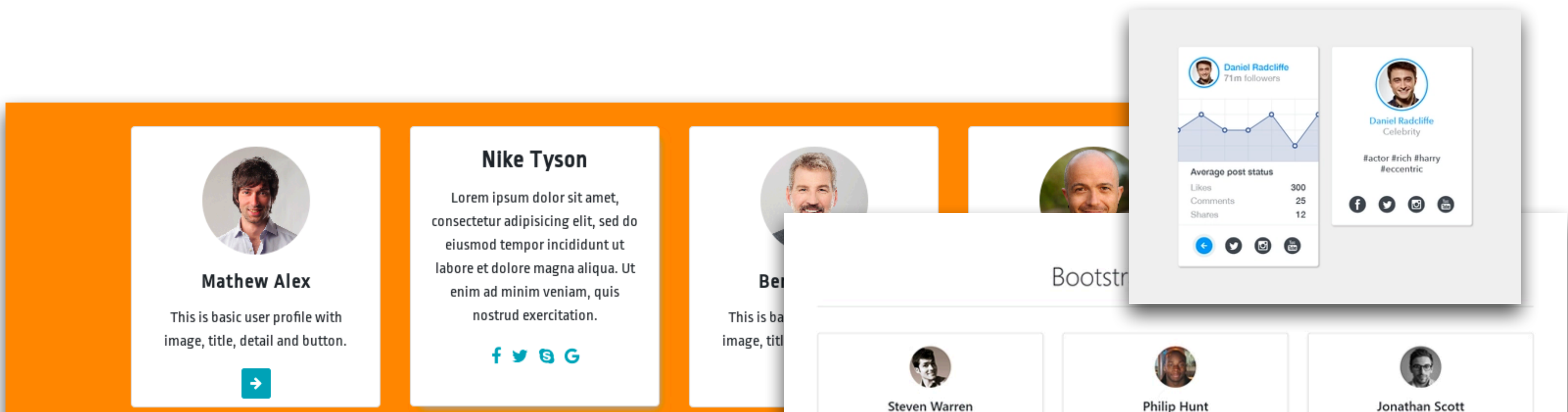
thank you for not thanking

+3 -72,498 ■■■■□

values

more components
does not guarantee more efficiency

fight for atomic components

avoid manifest destiny

avoid manifest destiny

solve people problems
in meatspace

values over everything

design systems are for quality
in the face of deadlines

```
5    <Icon />
6    <ButtonIcon />
7    <ActionIcon />
8    <MenuIcon />
```

```
11  <Icon
12       sideOfButton="right"
13       menuStyle="dark"
14       hoverAction="open"
15  />
```

only relevant for
inside of a button

this is a button icon

Customize

Net volume from sales ℹ️

$31.49

Jan 2011   Feb 2020

this is a regular icon
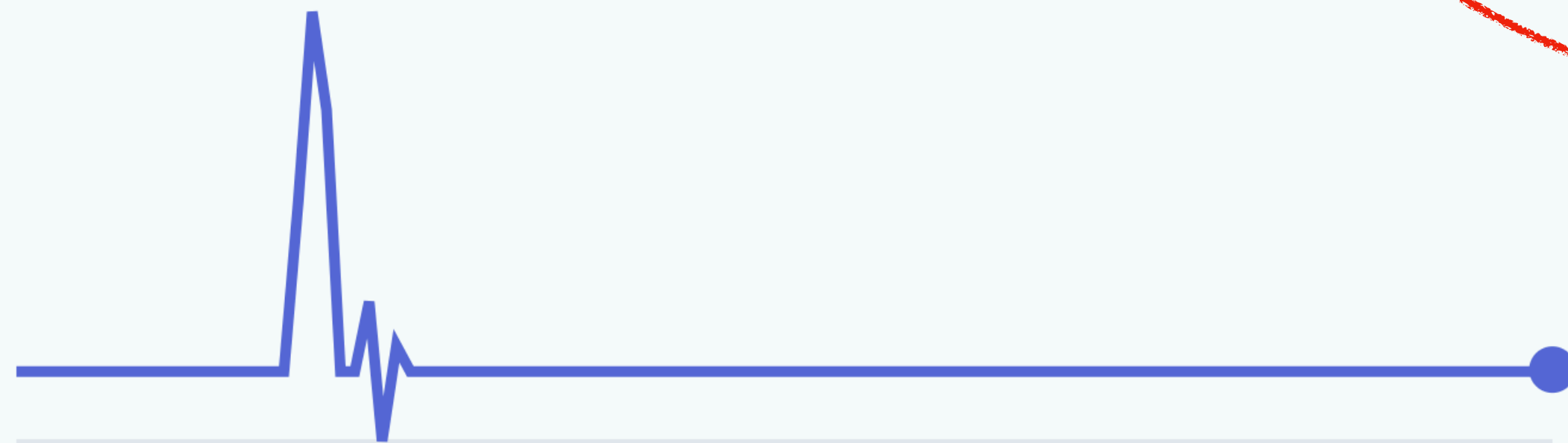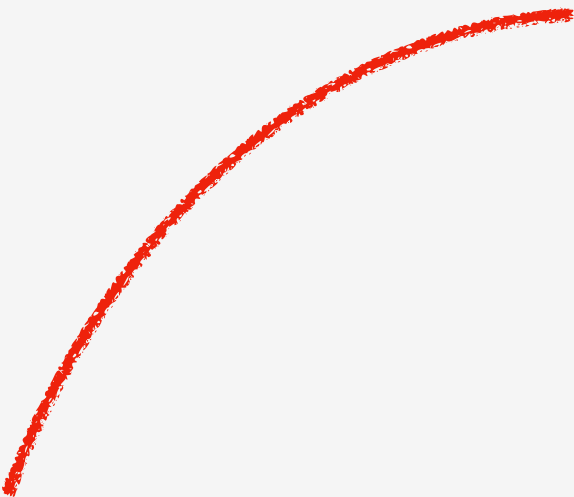
```
18  <Button icon="gear">
19  | Customize
20  </Button>
```

Button injects its own Icon

```
26  <Button>
27  │ Customize
28  │ <Icon type="gear" />
29  </Button>
```

wrong size icon
for inside a button

```
31  <Button>
32  │ Customize
33  │ <ButtonIcon type="gear" />
34  </Button>
```

Special icon type for inside buttons…

```
36  <Button
37    icon={<Icon type="gear" />}
38  >
39    Customize
40  </Button>
```
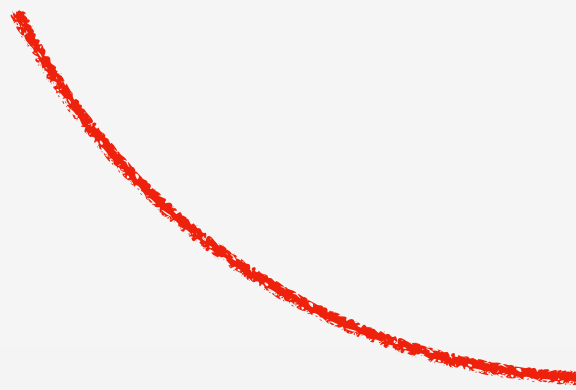
Pass it in as a prop
so we can modify it

```
42  <Button
43    icon={<Icon type="gear" />}
44    label="Customize"
45  />
```

Disallow children to avoid jamming an icon in there

```
26  <Button>
27  │ Customize
28  │ <Icon type="gear" />
29  </Button>
```

nice looking &
intuitive, just need
to fix the size...

Icon knows about **Button**

-VS-

Button knows about **Icon**

```
48    if (isInButton) {
49        return <CommonIcon
50          size={12}
51          type={type}
52        />;
53    } else {
54        return <CommonIcon
55          type={type}
56        />;
57    }
```

Inside of Icon, we render ourselves differently if we can tell that we're in a button

```
26  <Button>
27  |  Customize
28  |  <Icon type="gear" />
29  </Button>
```

```
18  <Button icon="gear">
19    Customize
20  </Button>
```

Button.js

```
2    import Icon from 'ds/Icon';
3
4    // ...
5    if (containsComponent(children, Icon)) {
6      modifyEachIconToHaveSmallerFont();
7    }
8    // ...
```

oh no.

```
3  .Button > .Icon {
4    width: 12px;
5    height: 12px;
6  }
```
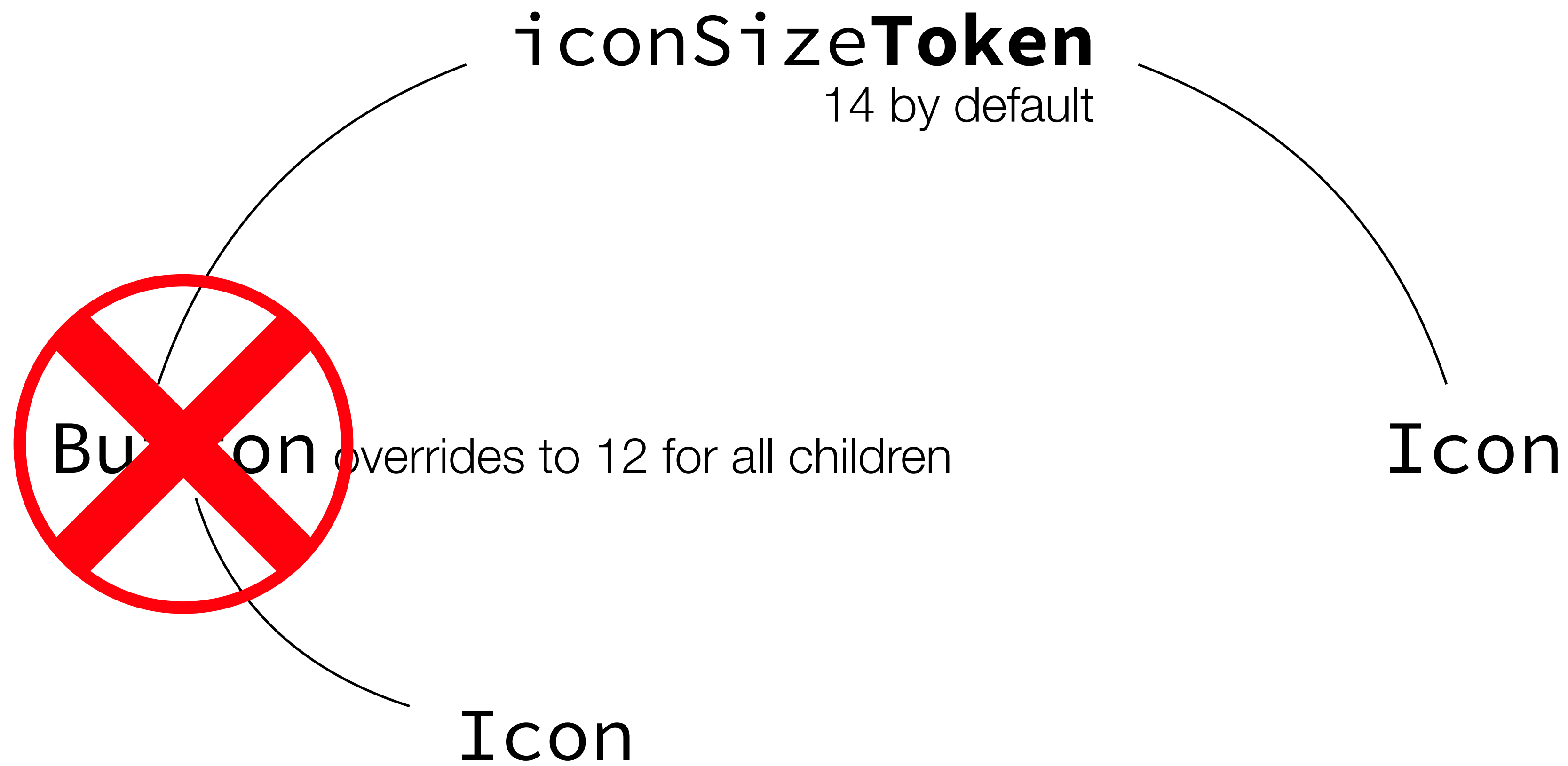
create relationships
without encoding strict dependencies

kinda like a foreign key
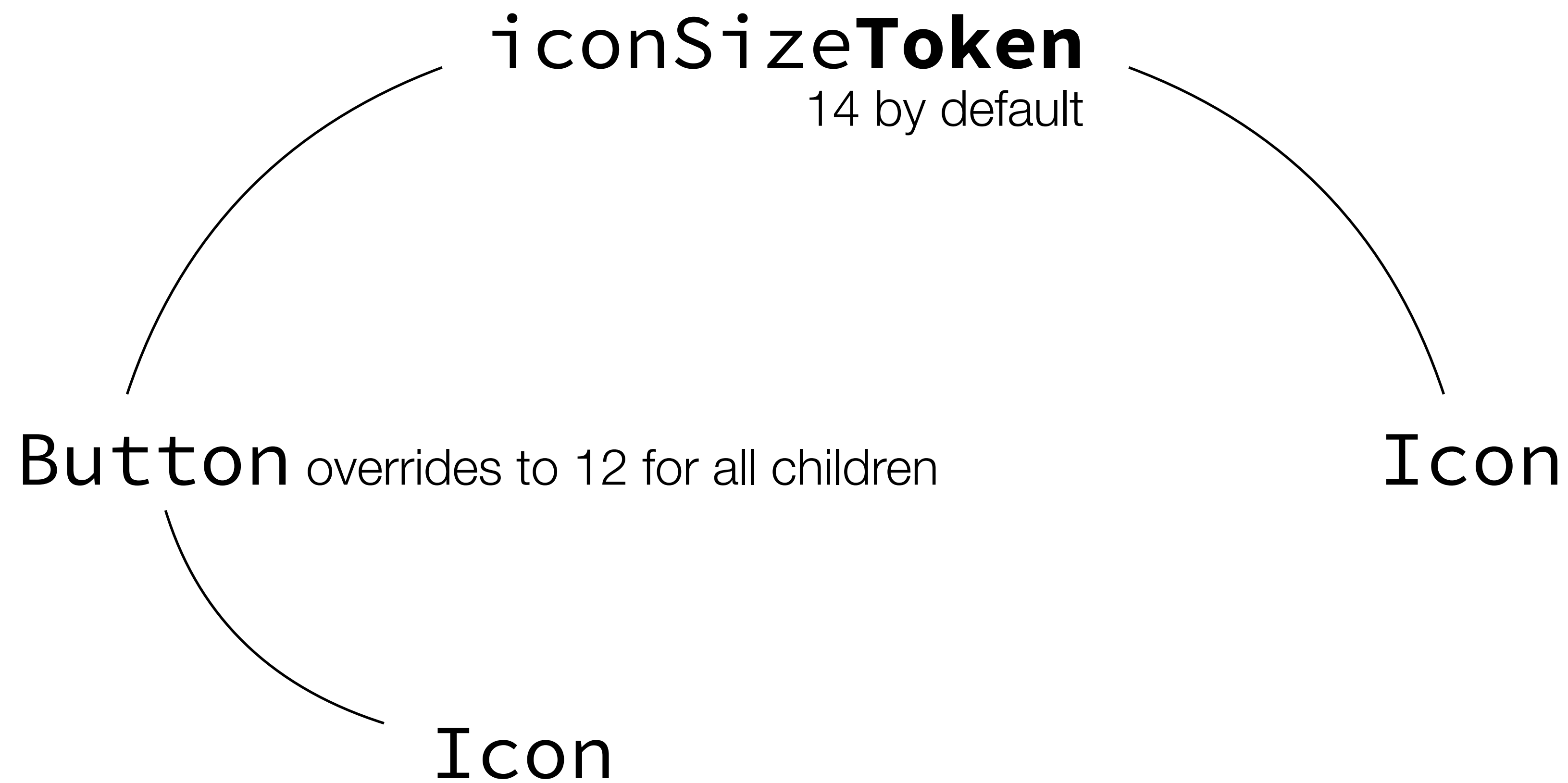
iconSize**Token**

Button   Icon

iconSize**Token**
14 by default

Button overrides to 12 for all children

Icon

Icon

not pictured: probably some context shenanigans

iconSize**Token**
14 by default

Button overrides to 12 for all children

Icon

Icon

not pictured: probably some context shenanigans

iconSize**Token**

14 by default

Button overrides to 12 for all children

I̶c̶o̶n̶

I̶c̶o̶n̶

not pictured: probably some context shenanigans

26 `<Button>`
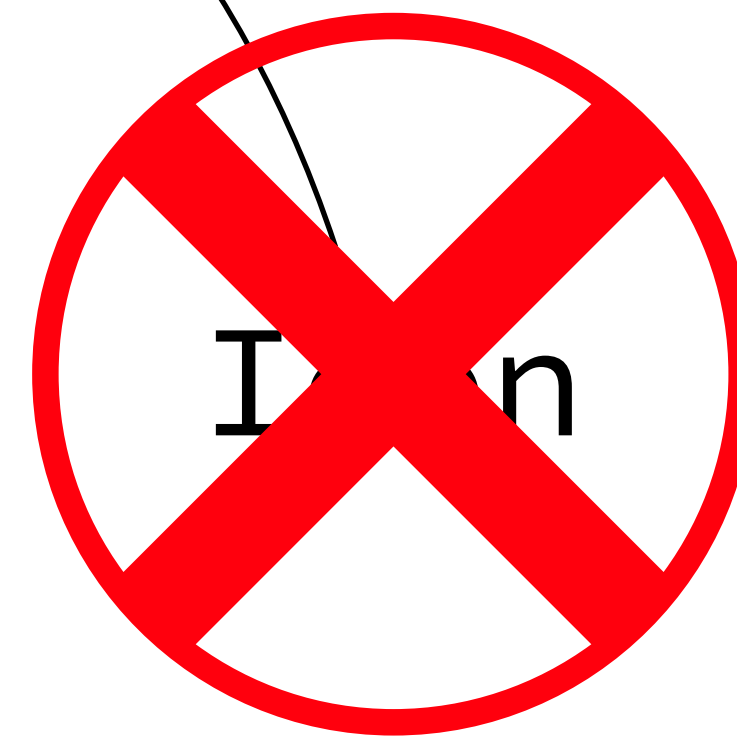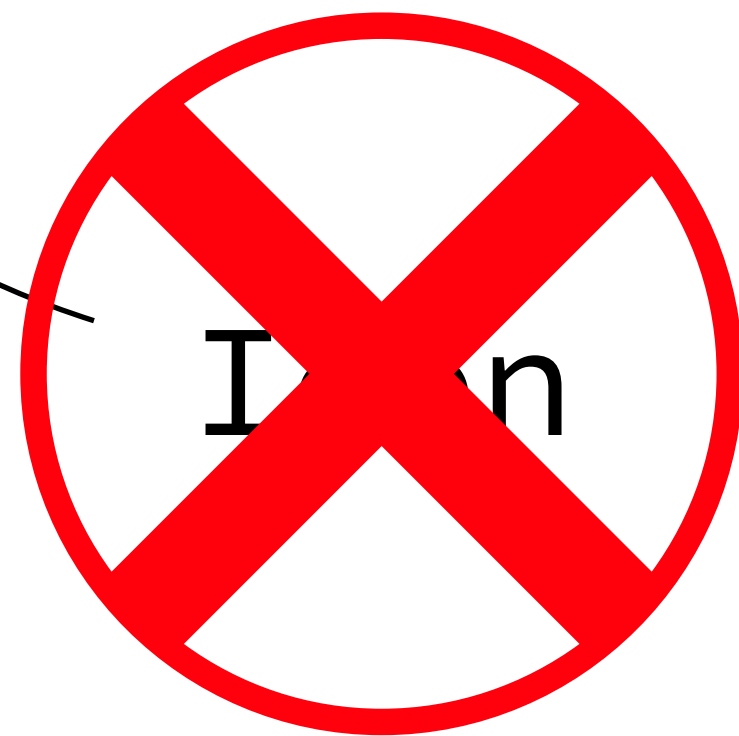
overrides iconSizeToken
for its children to 12px

27 Customize

reads the value as
12px for this context

28 `<Icon type="gear" />`

29 `</Button>`

decentralization

```
26  <Button>
27    Customize
28    <Icon type="gear" />
29  </Button>
```

Configuration is centralized by default and that isn't super great

inversion of control
as a means for configuration

```
4    // colors.js
5
6    export const brandColor = Token.create('#c0ffee');
7
```

```
15  // homepage.js
16
17  import {brandColor} from 'ds/colors';
18
19  brandColor.override('#bada55');
20
21  return(<Homepage theme={[brandColor]} />);
22
```

only do
internationalization once

```
14
15  <CountrySelect
16    placeholder={
17      props.i18nLookup('country-placeholder')
18        || 'Select country…'
19    }
20  />
21
```

good composition allows for good internationalization

borrowing good ideas
from apple

```
<View modifiers={[
  box, pressable, button
]}>
```

vs.
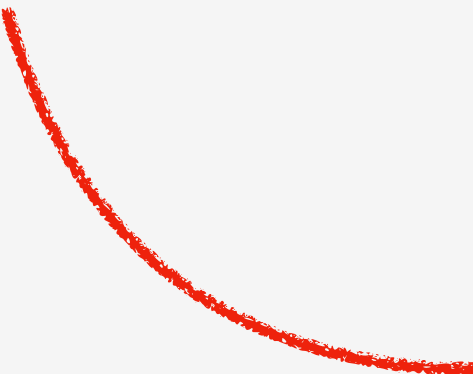
```
<Button>
  <Pressable>
    <Box>
```
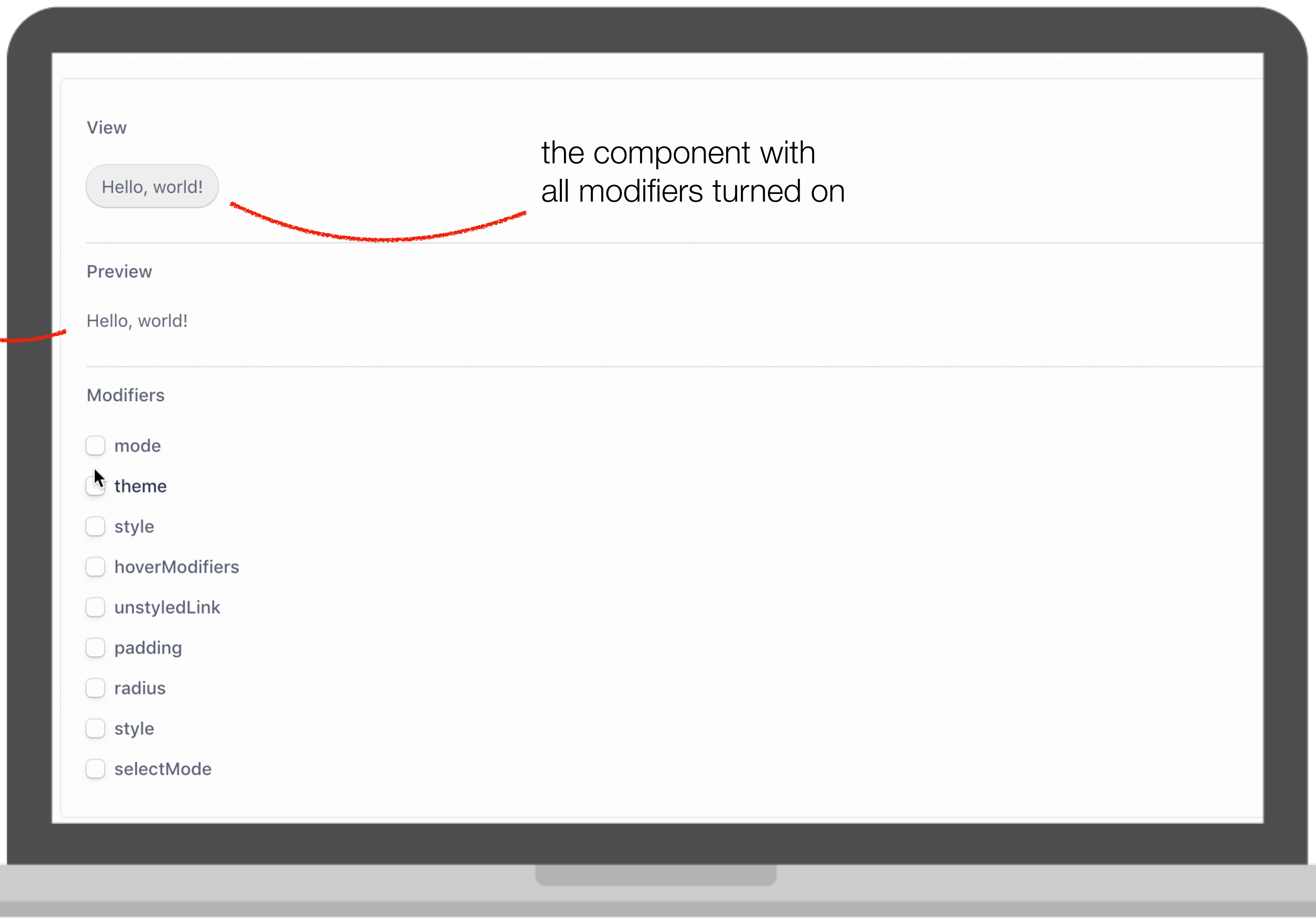
```swift
struct PrimaryLabel: ViewModifier {
    func body(content: Content) -> some View {
        content
            .padding()
            .background(Color.red)
            .foregroundColor(Color.white)
            .font(.largeTitle)
    }
}
```

```
<View modifiers={[
  box, pressable, button
]}>
```

the modifiers run in order before
the `View` ever renders anything

the result of
each modifier
being turned
on

the component with
all modifiers turned on

View

Hello, world!

Preview

Hello, world!

Modifiers

- [ ] mode
- [ ] theme
- [ ] style
- [ ] hoverModifiers
- [ ] unstyledLink
- [ ] padding
- [ ] radius
- [ ] style
- [ ] selectMode

a react component that knows
how to take the output from the modifiers

```
<View modifiers={[
    box, pressable, button
]}>
```

runs first,
has nothing to do with react

render anywhere that you can implement `View`

your design system should last longer than react is "cool"

what does
success look like?

every arbitrary subset of your design system should be "complete"

decentralization & inversion of control

values outlast
implementations

design systems
are about values

Mahalo!

send complaints to **@slexaxton**