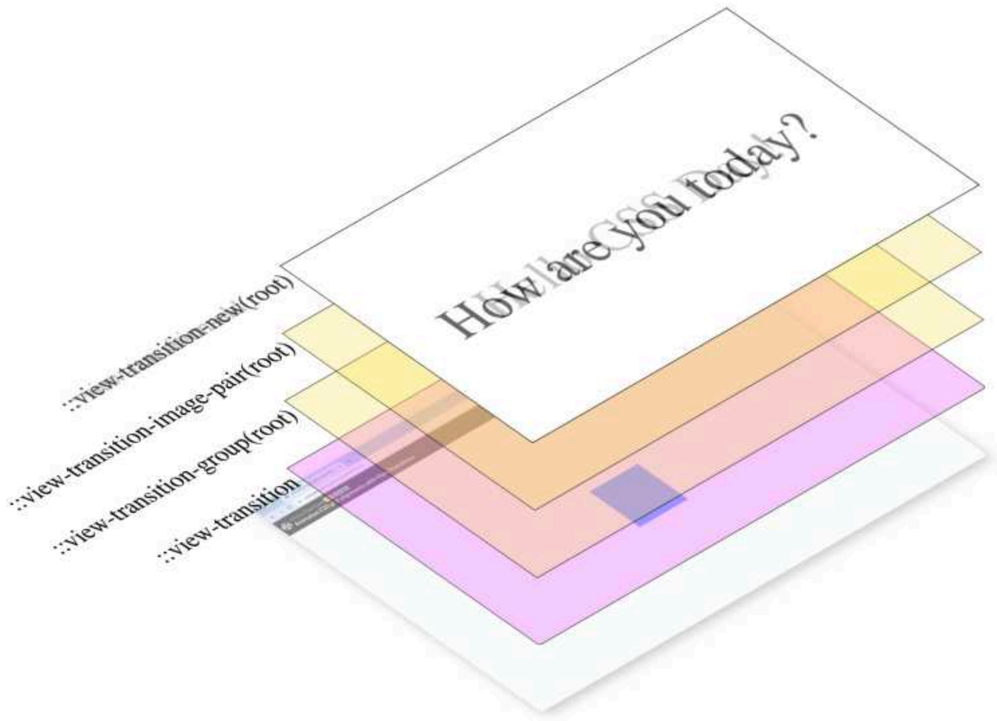
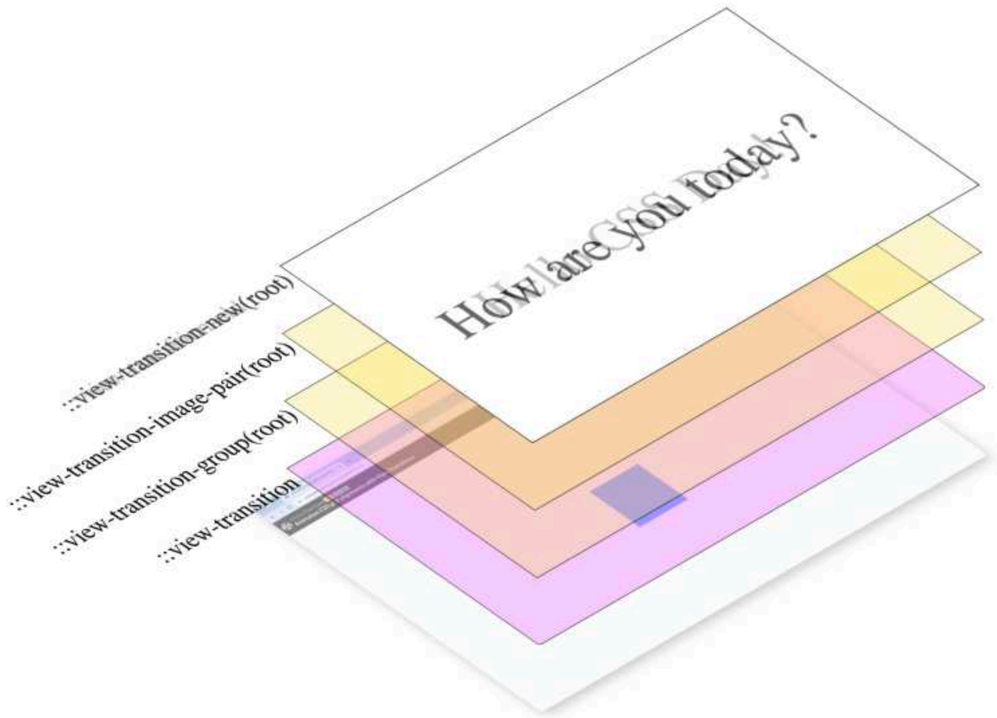



# Supercharge Web UX with View Transitions

*@bramus – 2026.04.28 (Beyond Tellerrand)*

# Beyond What? (English)

In 2010 Marc Thiele founded beyond tellerrand. The name **beyond tellerrand** expresses the aim, that everybody involved wants look a bit further, look **beyond the edge**. It also reflects the global perspective of the event. The expression is a mix of the English word “beyond” and the German phrase “Über den Tellerrand schauen,” which means “**Think outside the box**”. The exact translation for the sentence is "Take a look beyond the edge of the plate" … makes sense? ;)




# View Transitions: Cranking it up to 11

## (Safely, Maybe)

@bramus – 2026.04.28 (Beyond Tellerrand)


# View Transitions are on fire!

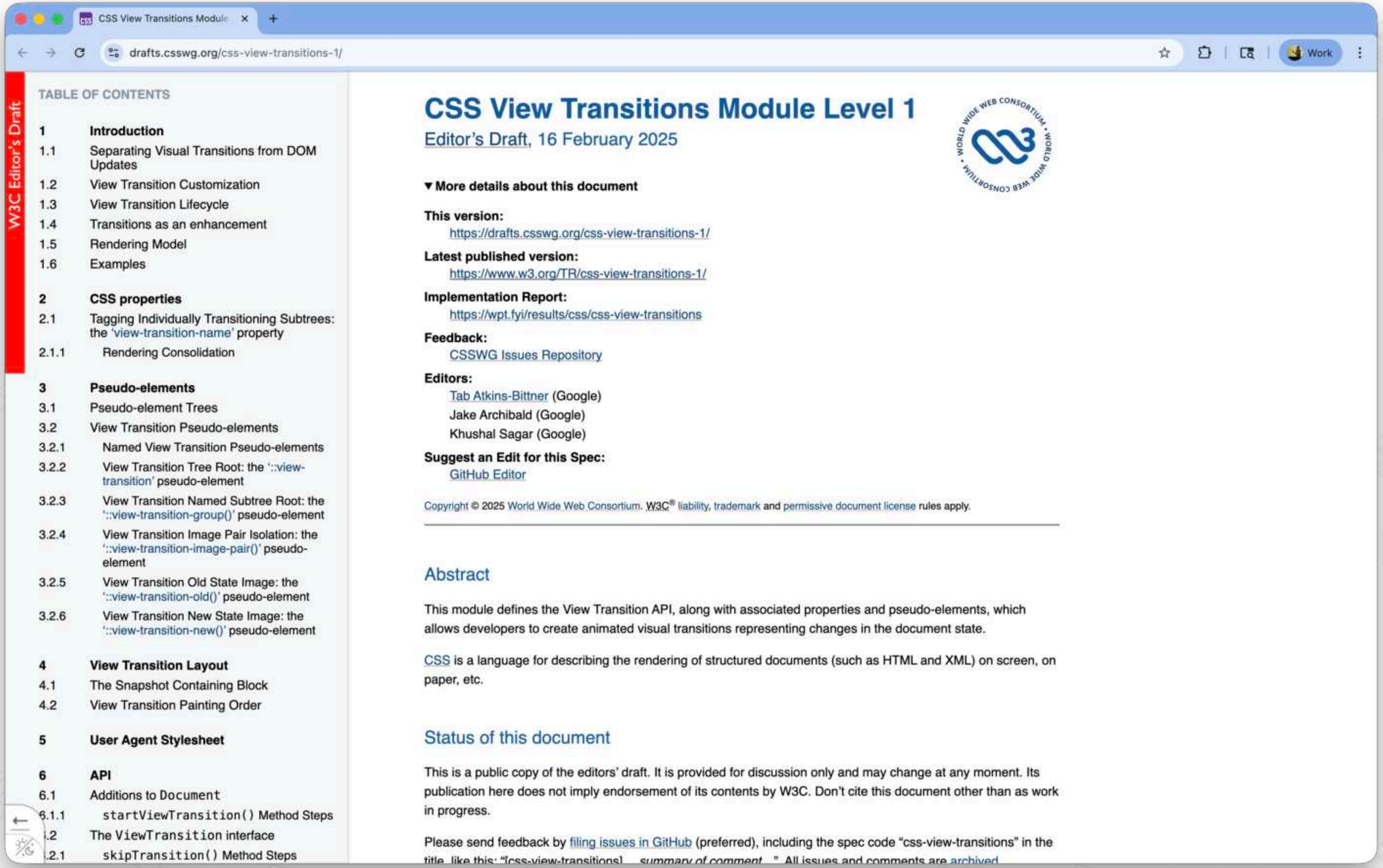
# Bramus


🦋 @bram.us

🦣 @bramus@front-end.social

~~𝕏 @bramus~~

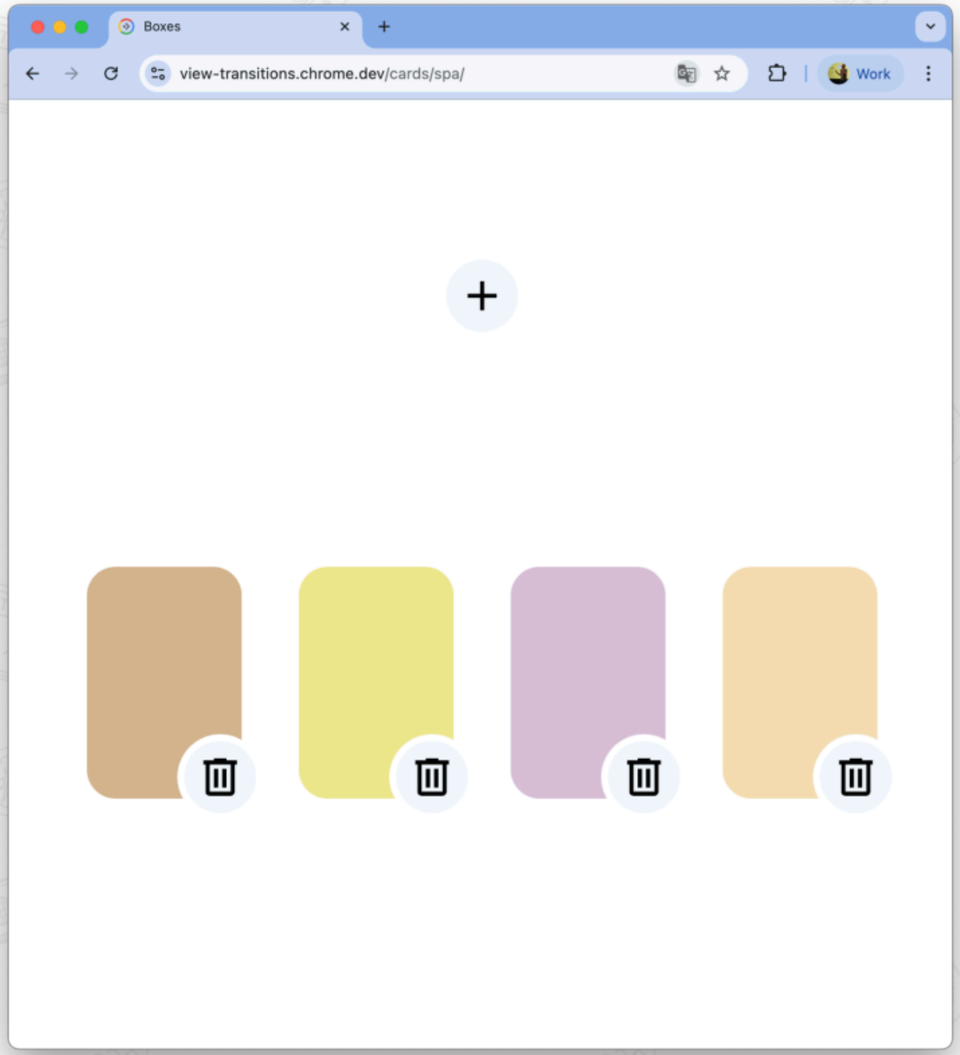

https://www.bram.us/



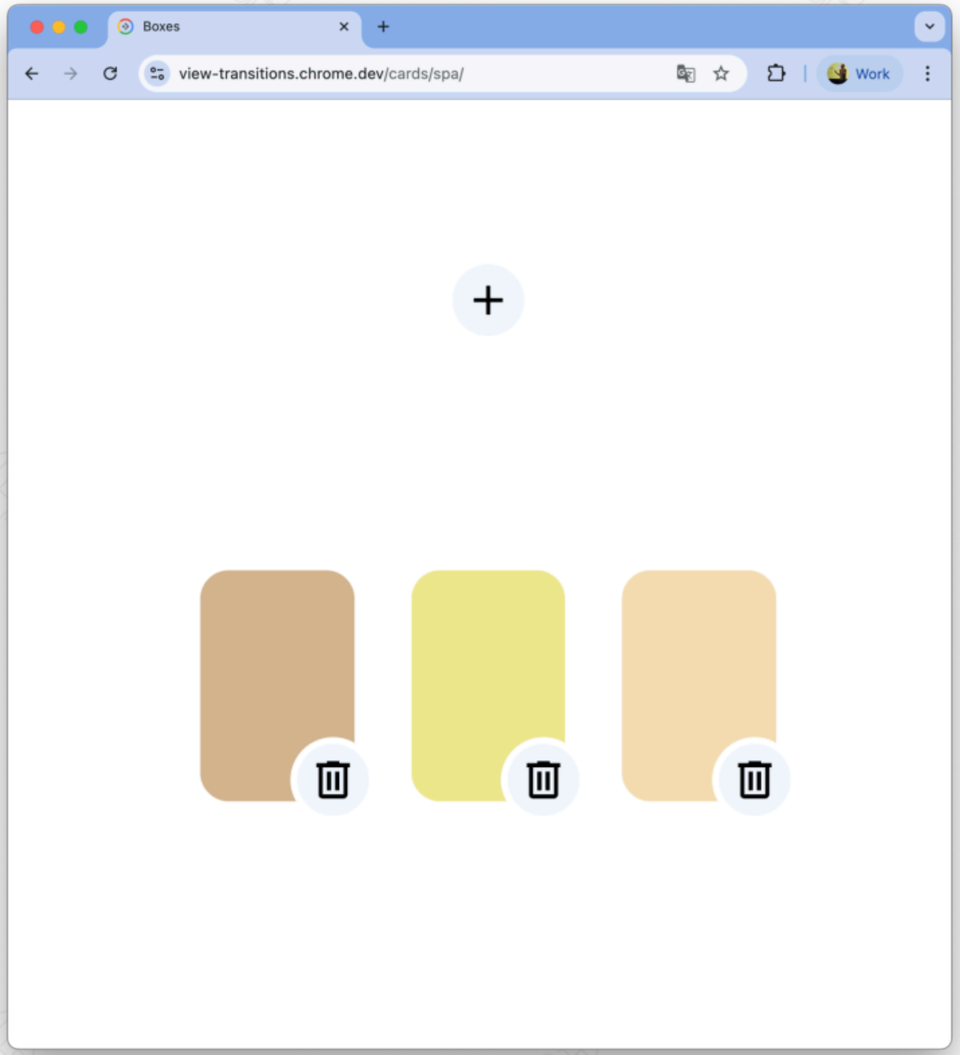

https://drafts.csswg.org/css-view-transitions-1/

*“The View Transition API gives you the power to create seamless visual transitions between different views on your website.”*

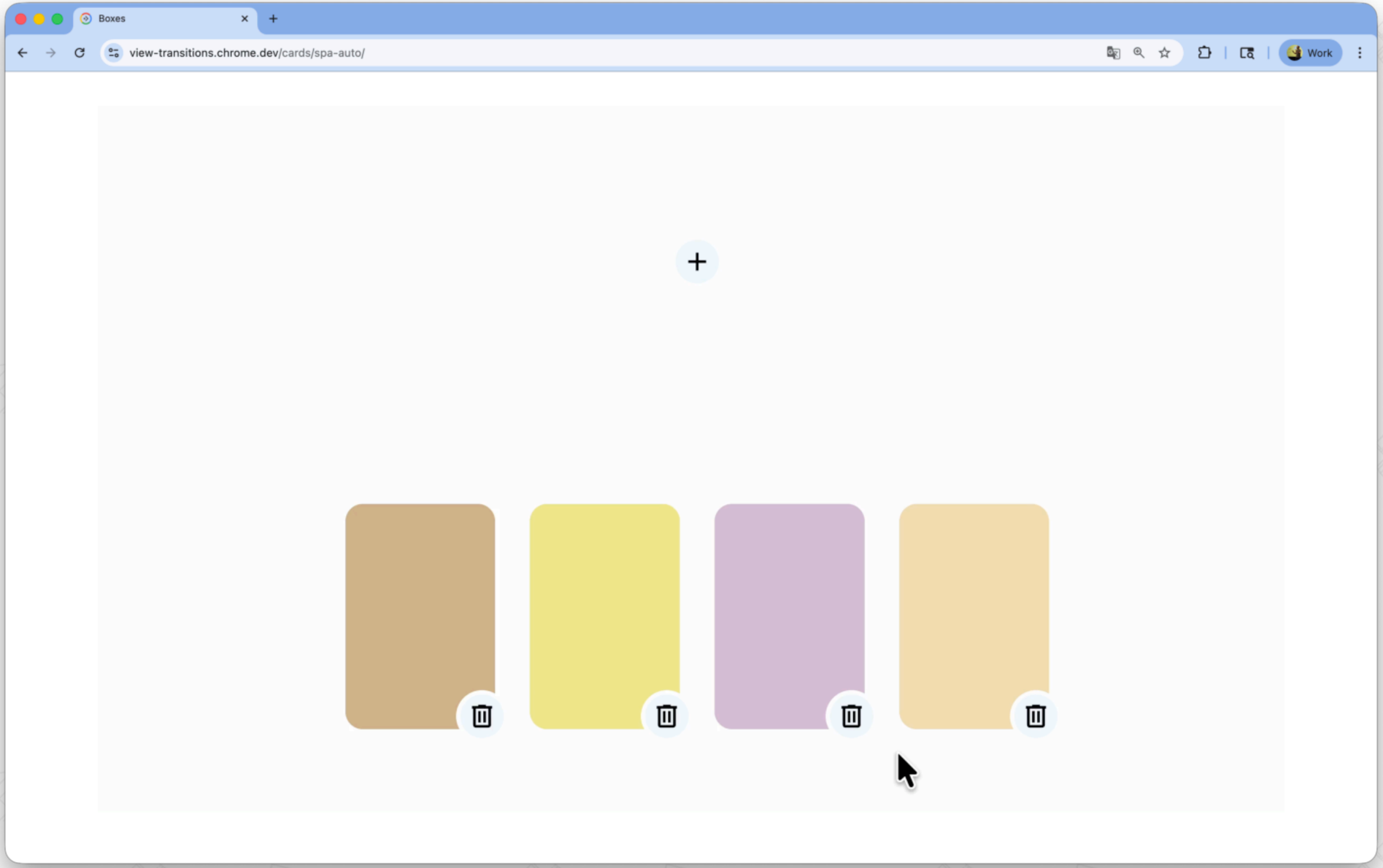
https://goo.gle/view-transitions



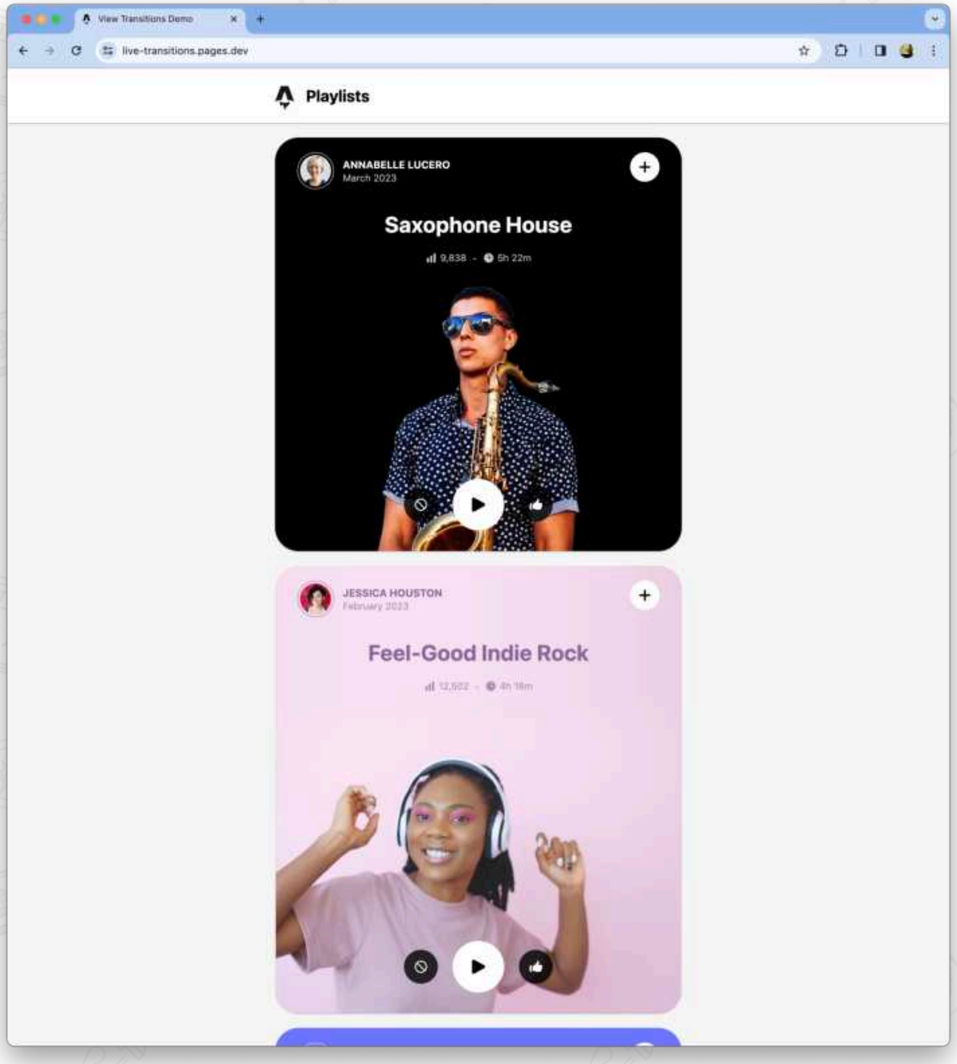

4 items



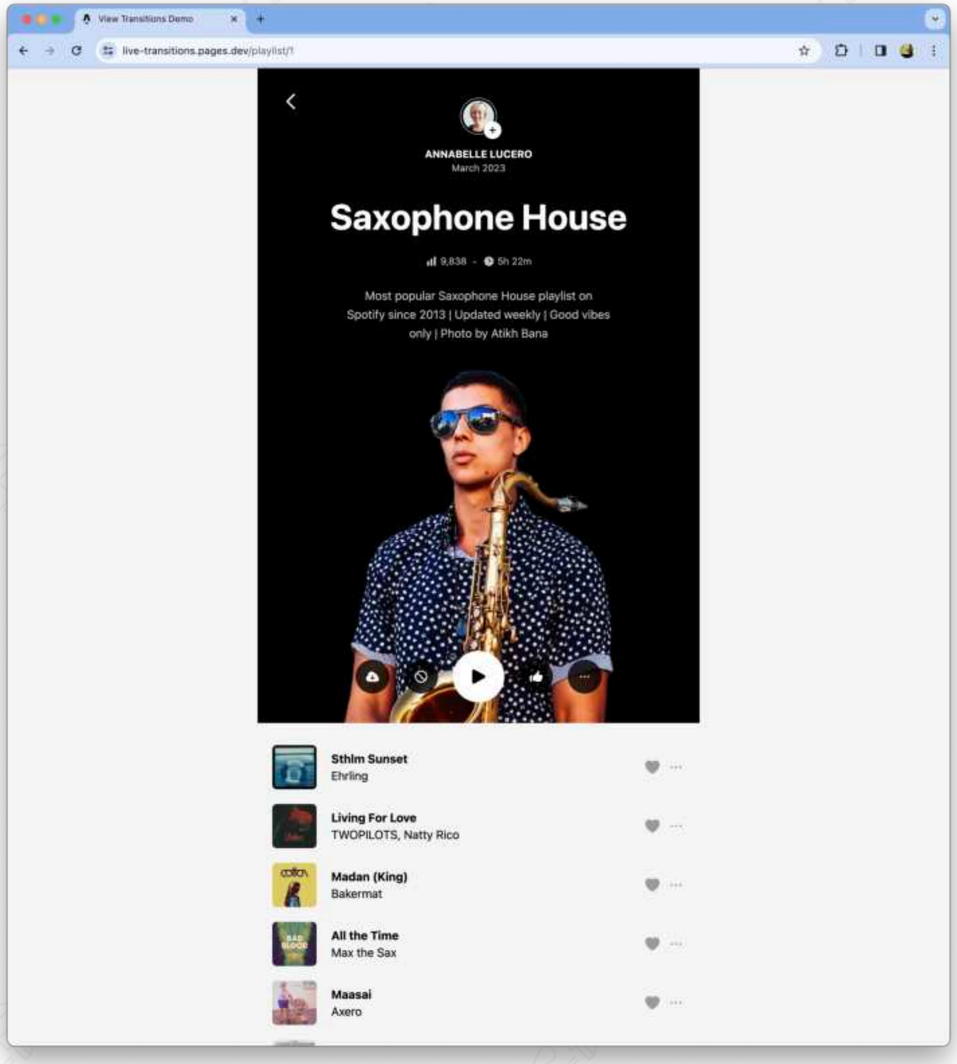

3 items



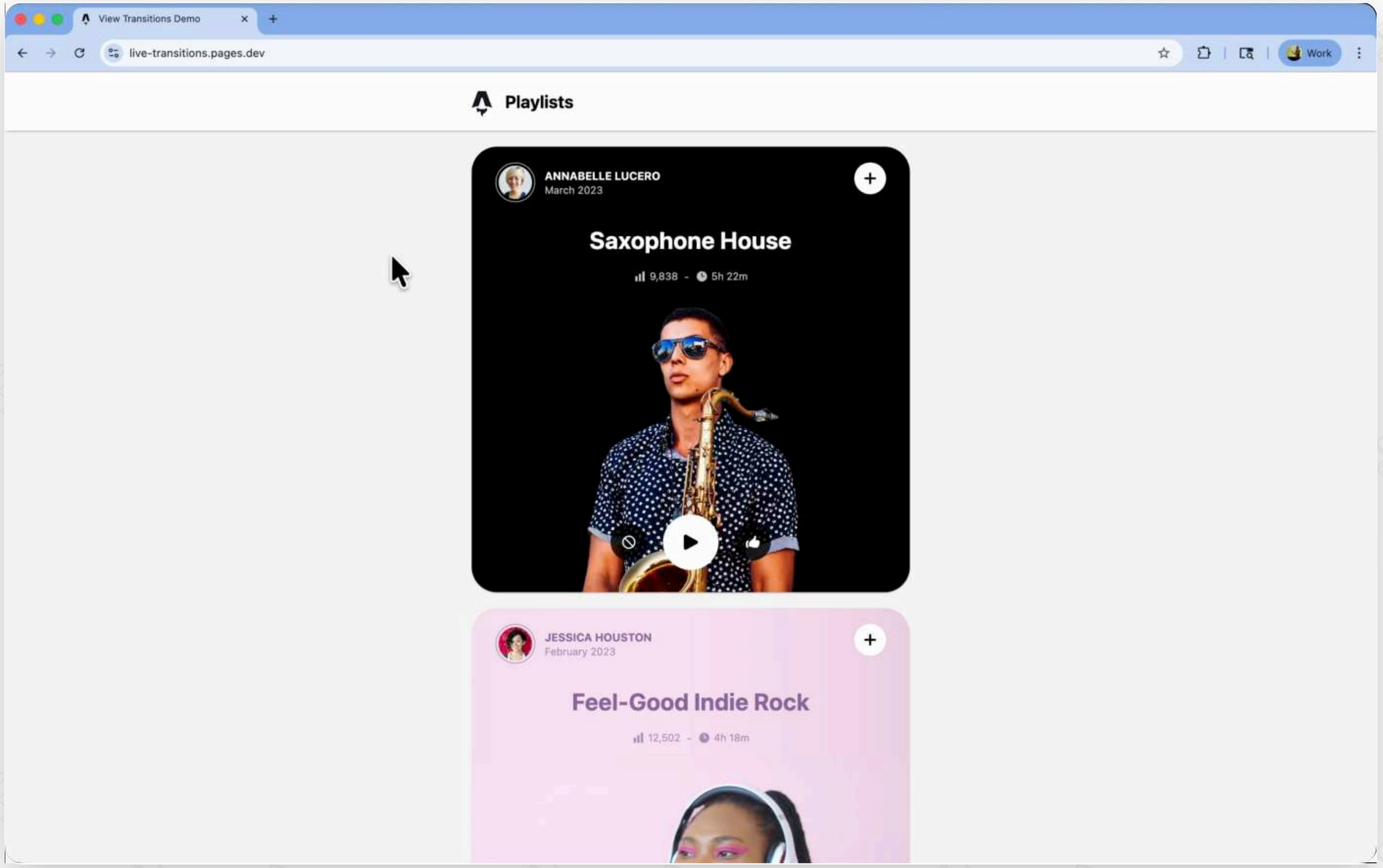

https://view-transitions.chrome.dev/cards/spa/




Overview



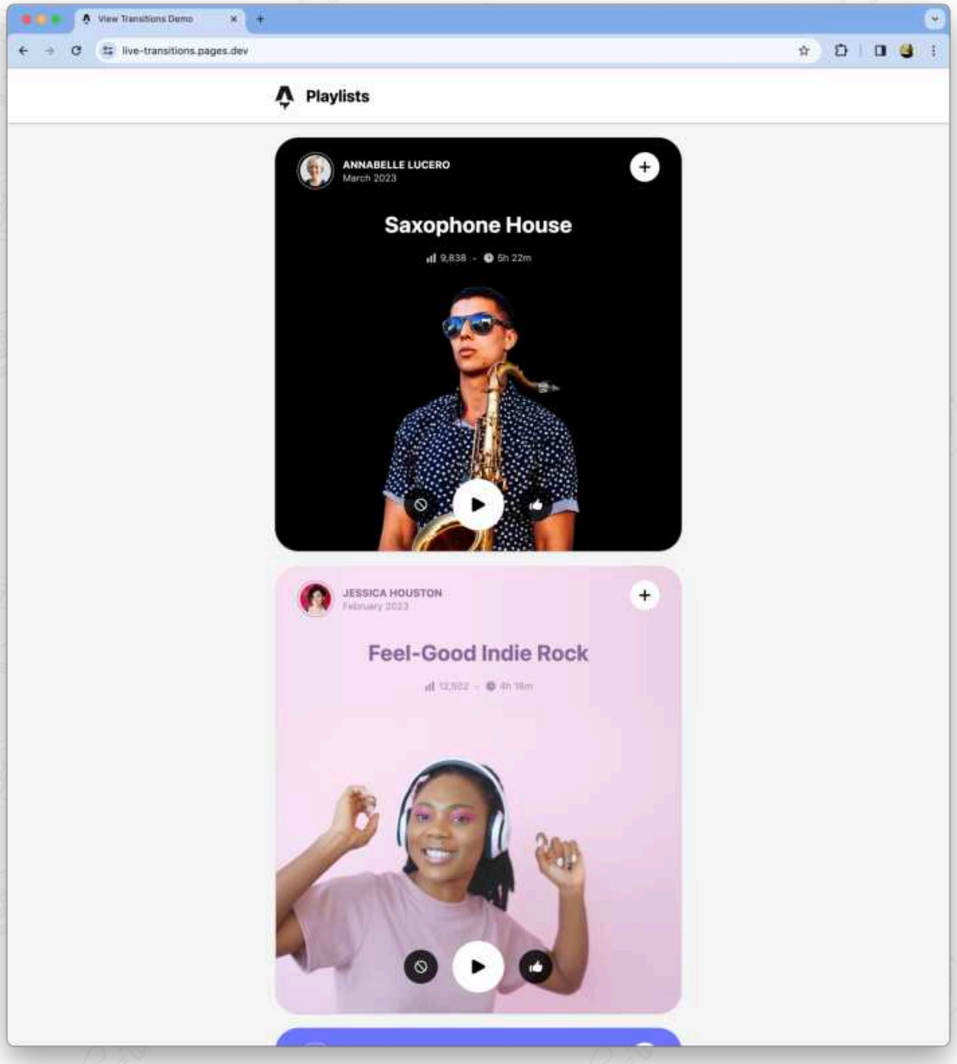

Detail



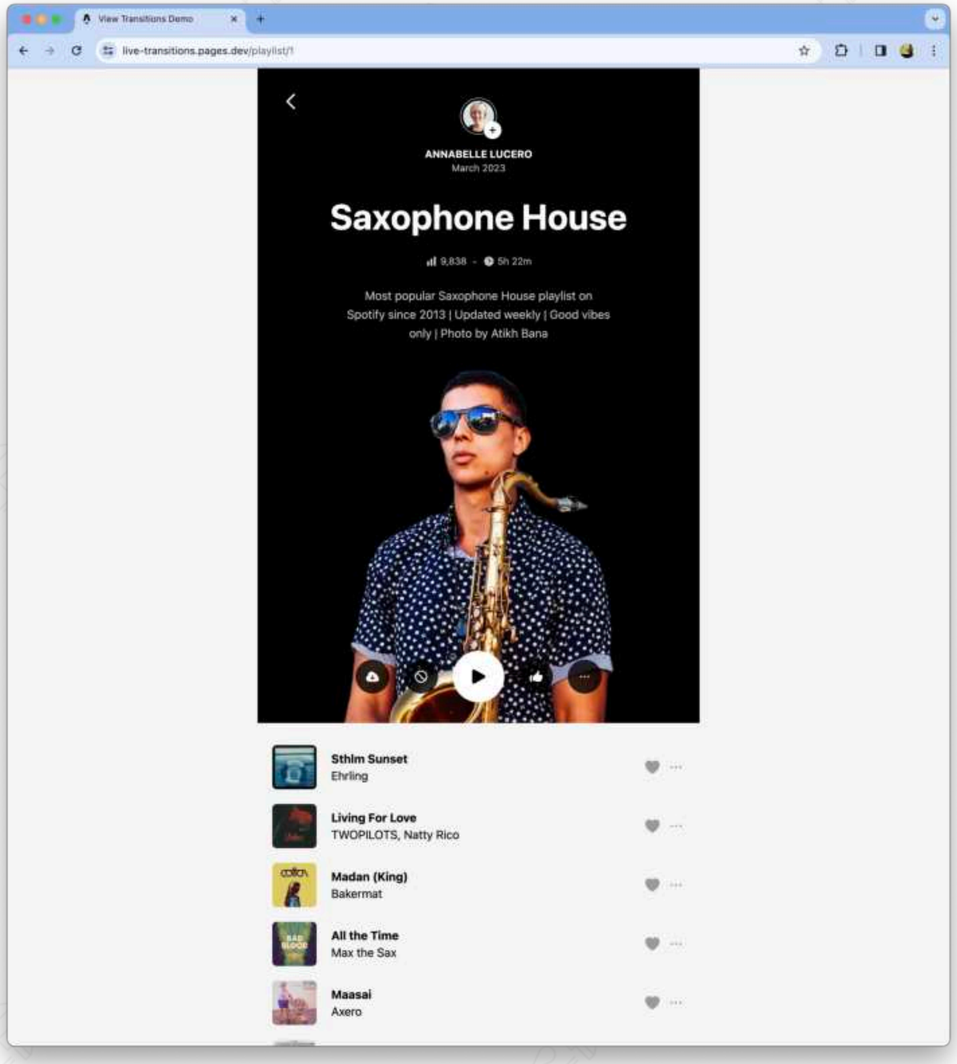

https://live-transitions.pages.dev/ by Maxi Ferreira

# 1. Identify and name elements to transition

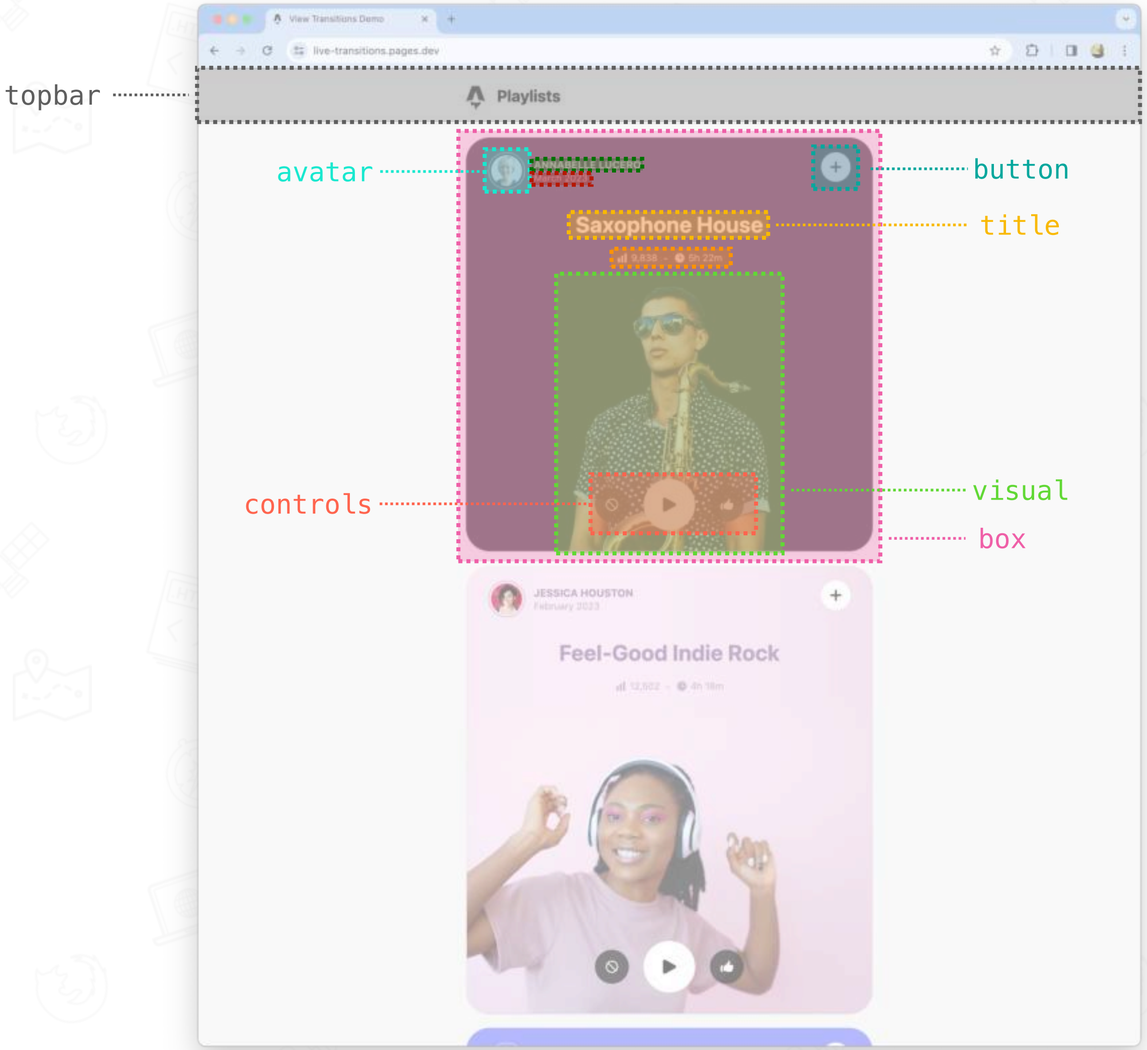
CSS `view-transition-name` property



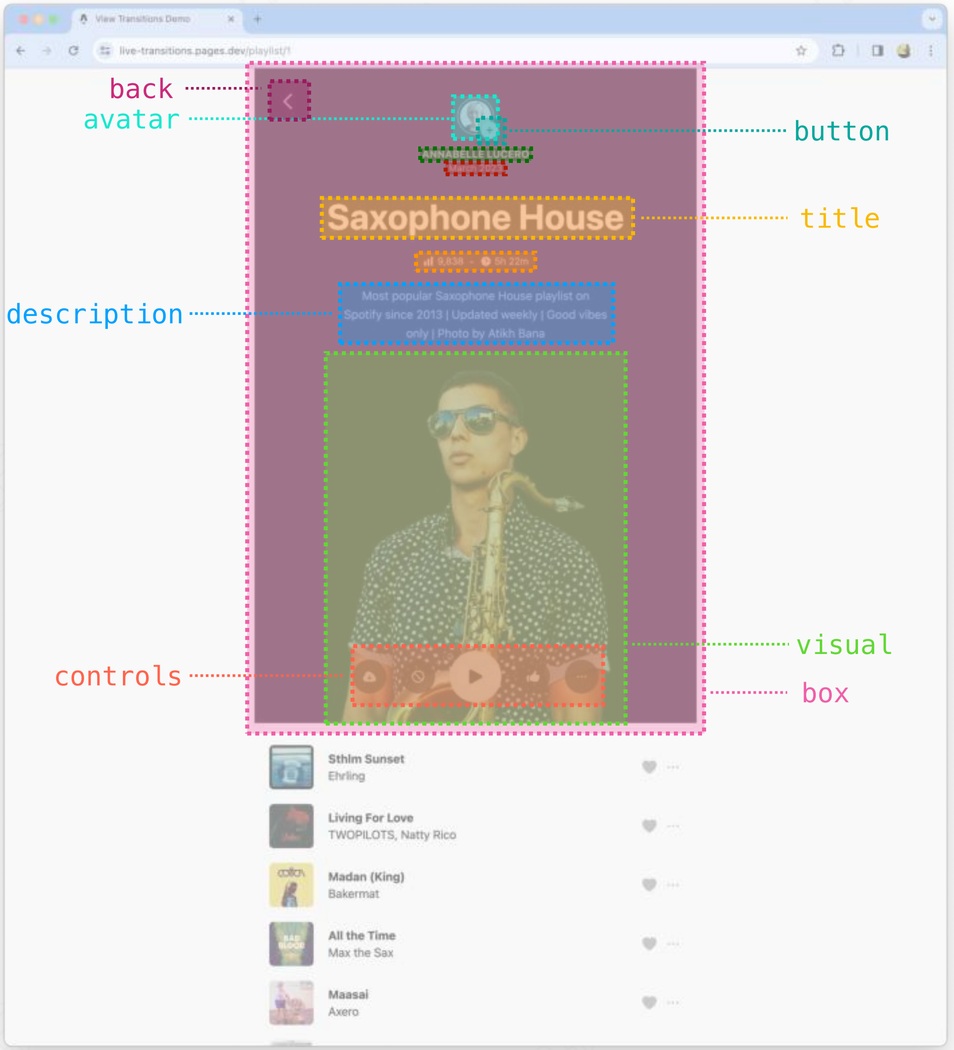

Overview




Detail




Overview




Detail

```
.card {
    view-transition-name: box;
}
```

```
.overview .card h2 {
    view-transition-name: title;
}

.detail .card h1 {
    view-transition-name: title;
}
```

# 2. Trigger the View Transition

Same-Document or Cross-Document

111 144 18

```
$link.addEventListener('click', e => {
  if (!document.startViewTransition) {
    showPlaylist(e.currentTarget);
    return;
  }

  document.startViewTransition(() => {
    showPlaylist(e.currentTarget);
  });
});
```

*Same-Document View Transition for Single-Page Applications*


126

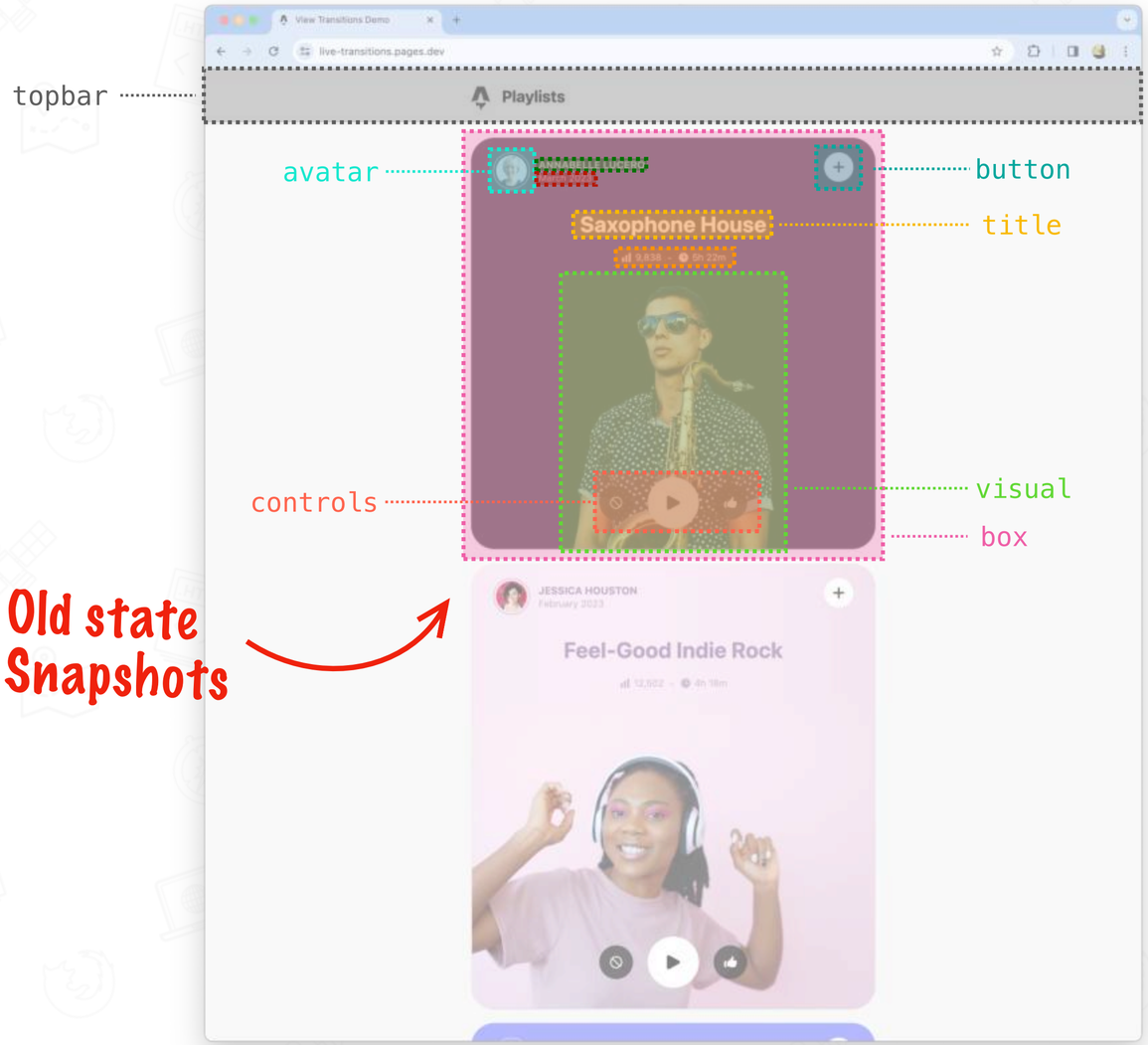

WIP


18.2

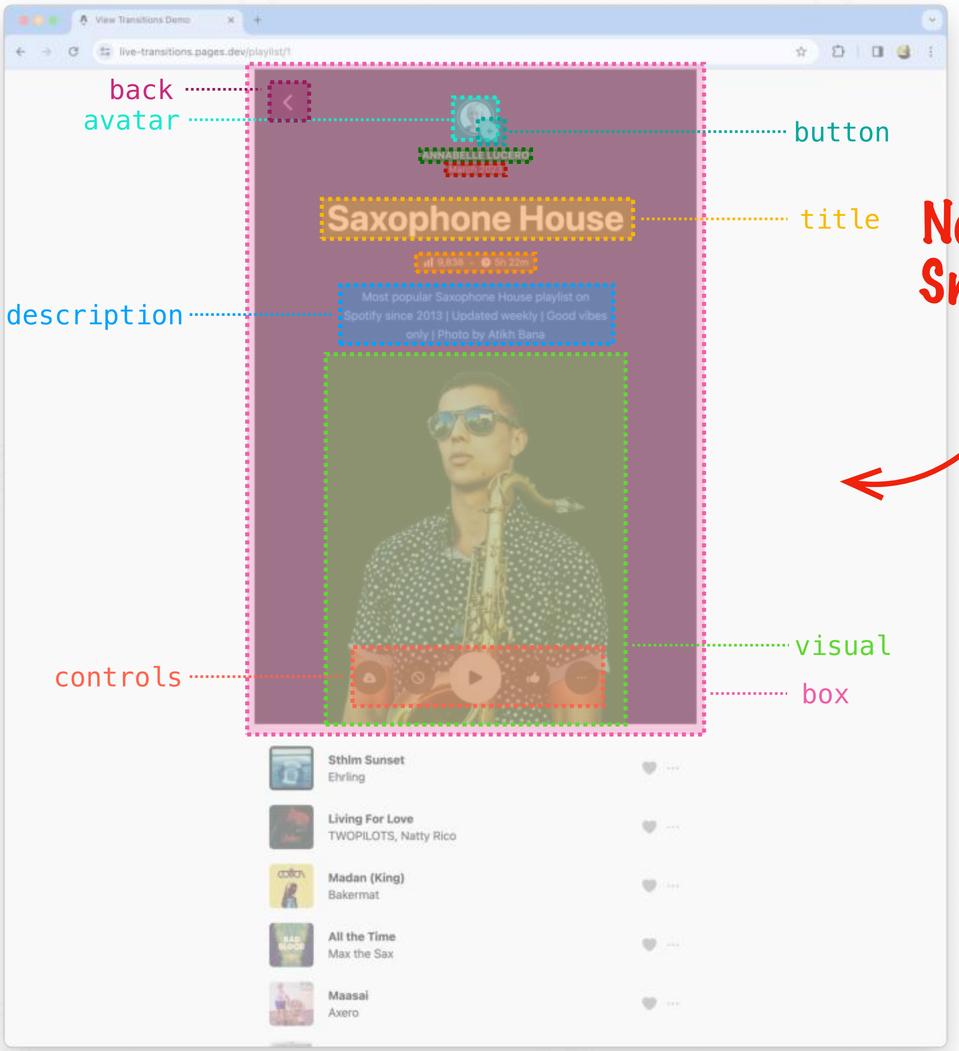
```
<a href="/playlists/2">Show Playlist</a>
<form action="/process" method="POST"></form>
```

```
@view-transition {
    navigation: auto;
}
```

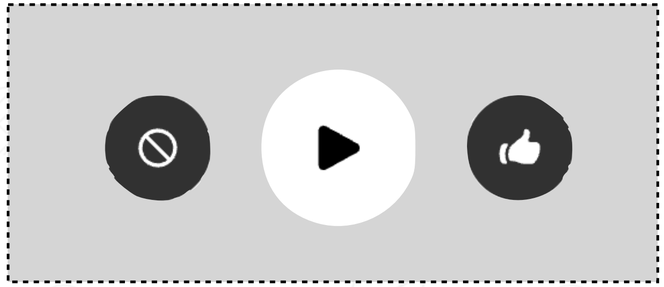
*Cross-Document View Transition for Multi-Page Applications*



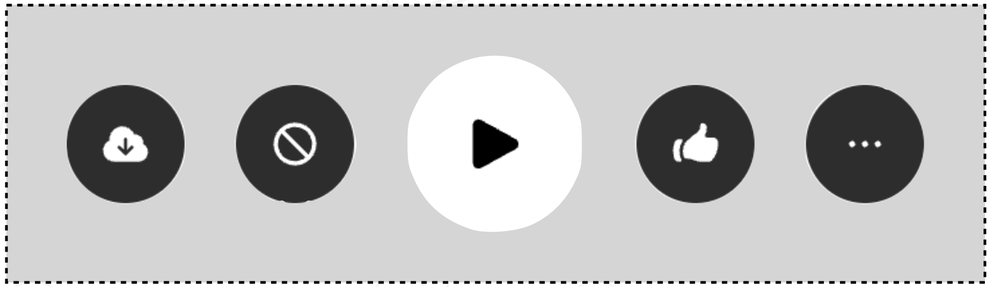

Overview



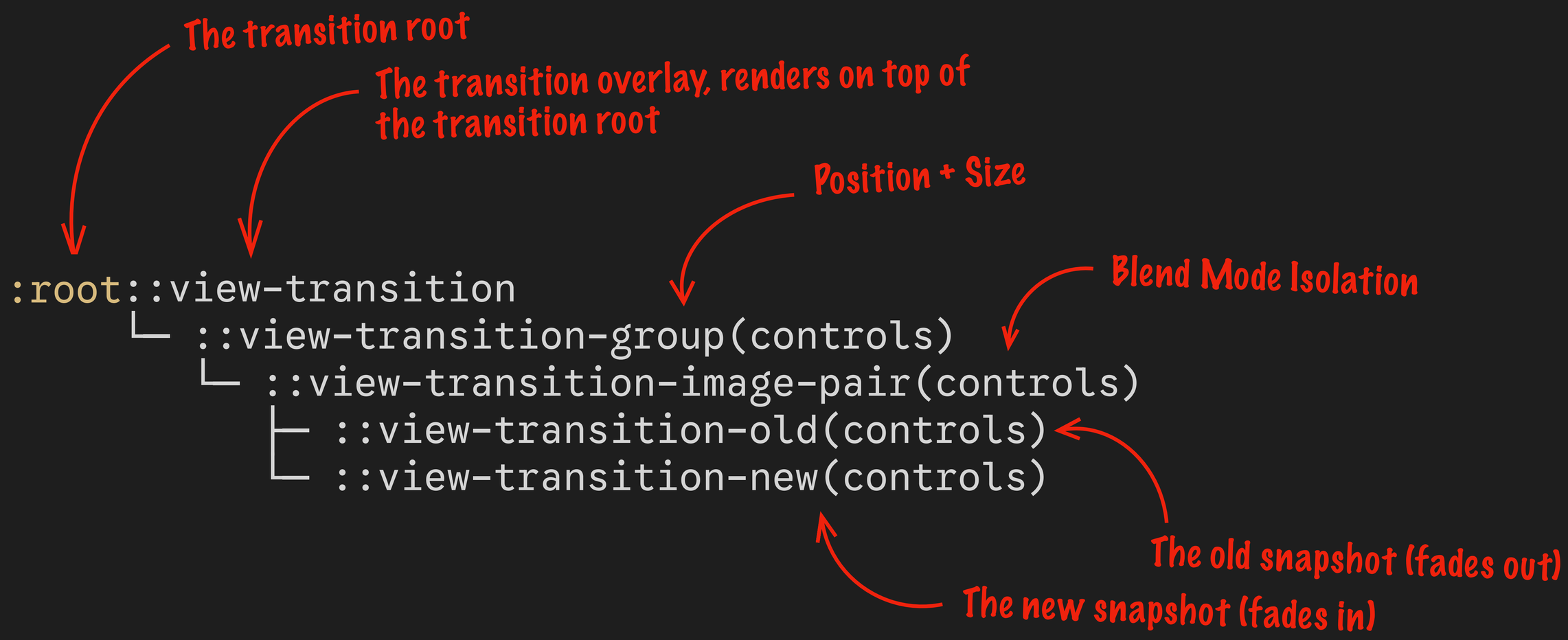

Detail

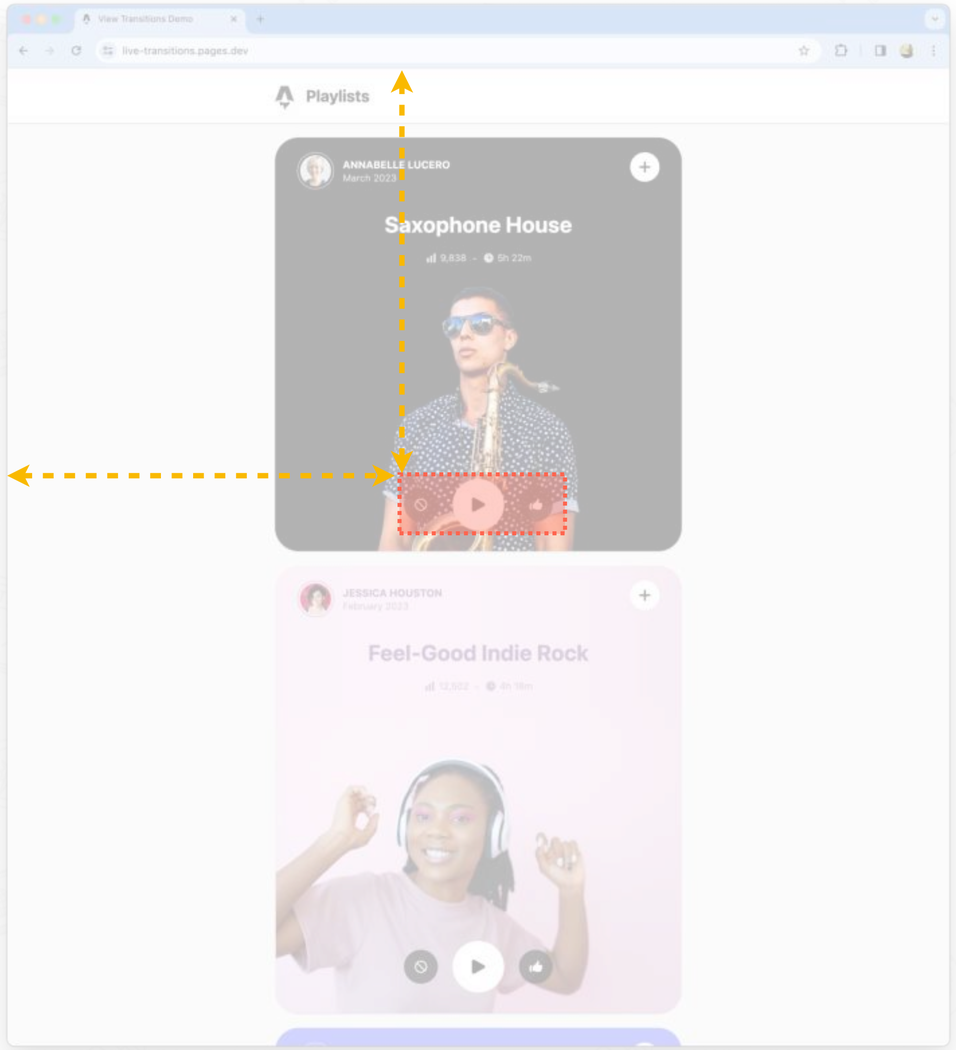


`::view-transition-old(controls)`

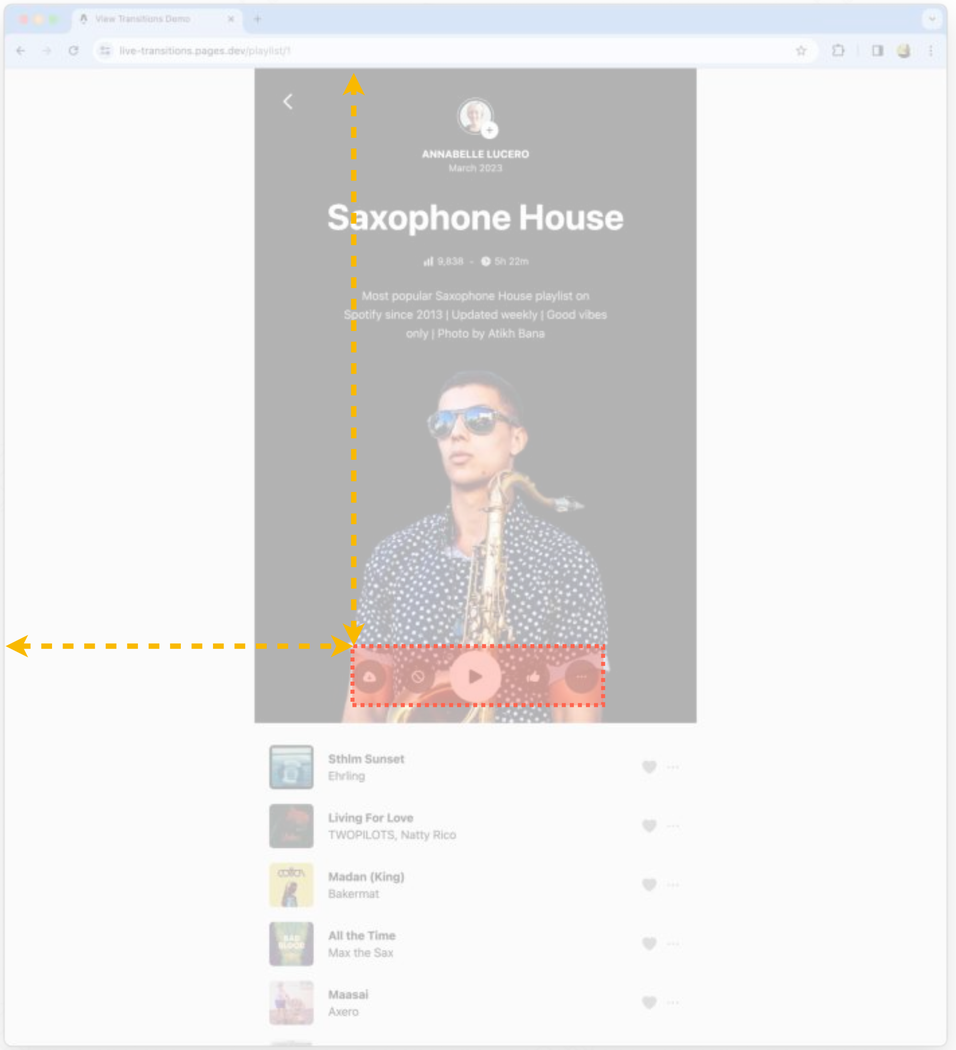


`::view-transition-new(controls)`

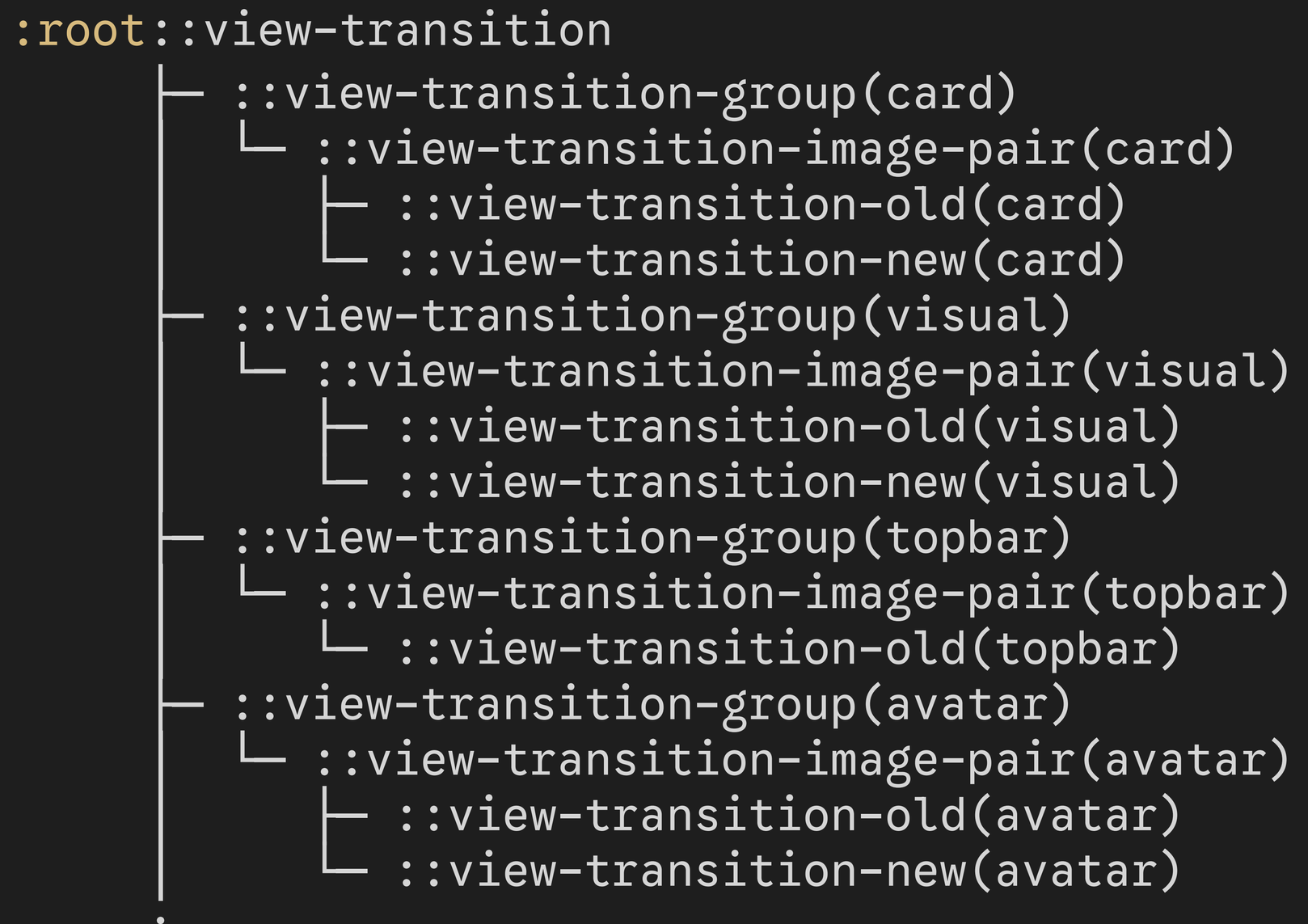

The transition root
The transition overlay, renders on top of the transition root
Position + Size
Blend Mode Isolation
:root::view-transition
└ ::view-transition-group(controls)
└ ::view-transition-image-pair(controls)
├ ::view-transition-old(controls)
└ ::view-transition-new(controls)
The old snapshot (fades out)
The new snapshot (fades in)

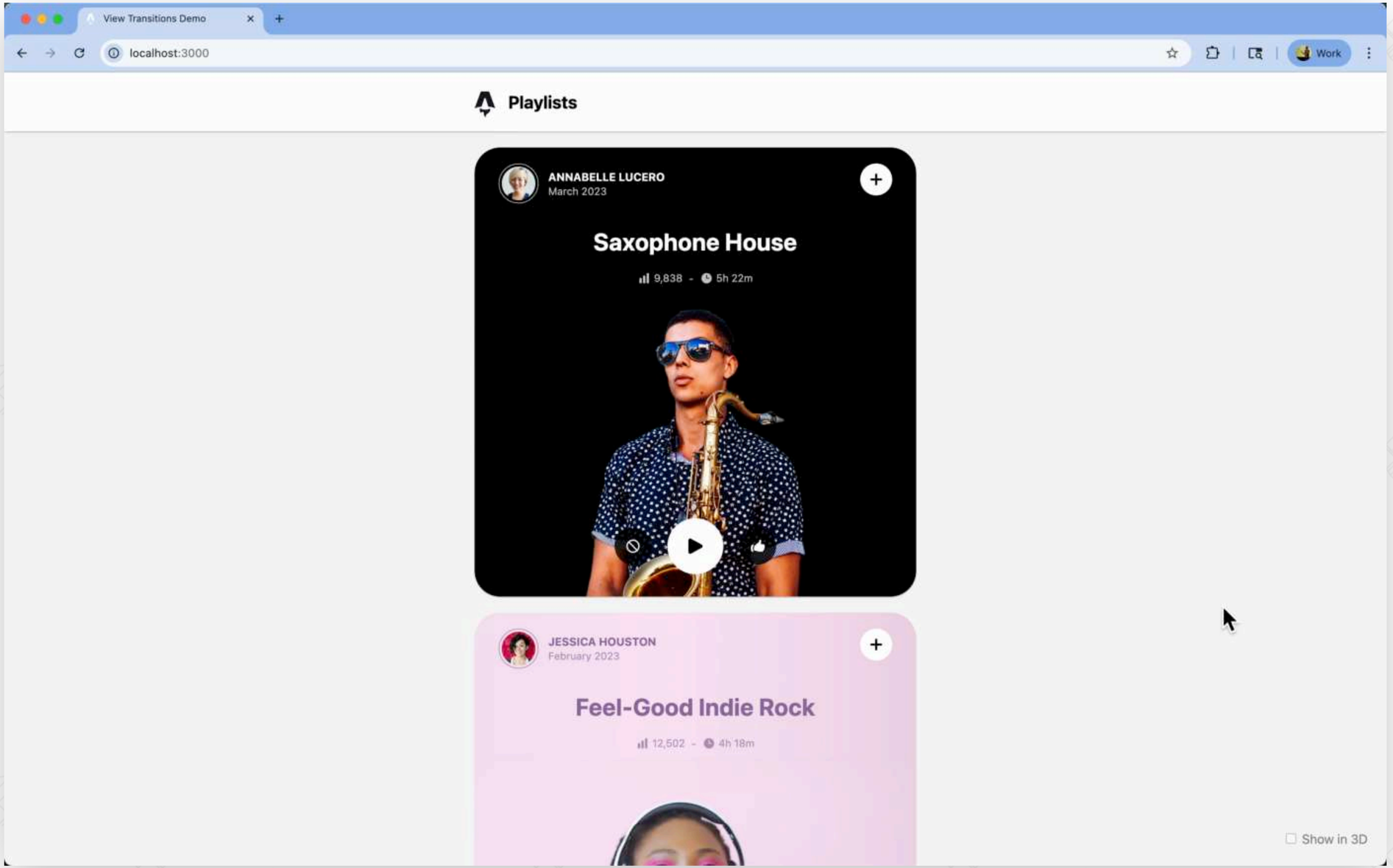



Overview




Detail


:root::view-transition
::view-transition-group(card)
::view-transition-image-pair(card)
::view-transition-old(card)
::view-transition-new(card)
::view-transition-group(visual)
::view-transition-image-pair(visual)
::view-transition-old(visual)
::view-transition-new(visual)
::view-transition-group(topbar)
::view-transition-image-pair(topbar)
::view-transition-old(topbar)
::view-transition-group(avatar)
::view-transition-image-pair(avatar)
::view-transition-old(avatar)
::view-transition-new(avatar)




https://live-transitions.pages.dev/ by Maxi Ferreira

# 3. Customize the animations

*(Optional)*

```
:root::view-transition {
  position: fixed; inset: 0;
}
:root::view-transition-group($NAME) {
  animation-name: -ua-view-transition-group-anim-$NAME;
}
:root::view-transition-image-pair(*) {
  isolation: isolate;
}
:root::view-transition-old(*) {
  animation-name: -ua-view-transition-fade-out;
}
:root::view-transition-new(*) {
  animation-name: -ua-view-transition-fade-in;
}
```

Move the group

Fade out the old snapshot

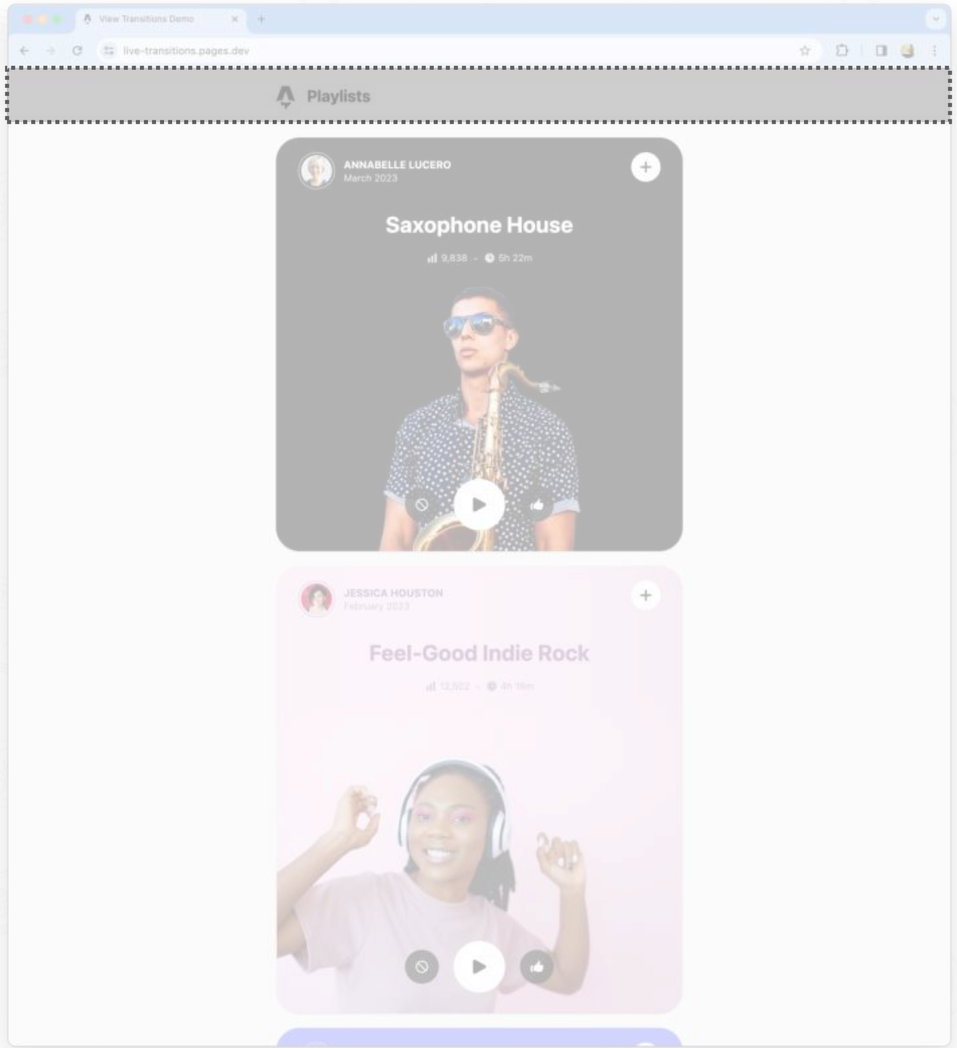
Fade in the new snapshot

*User-Agent Generated CSS (partial)*

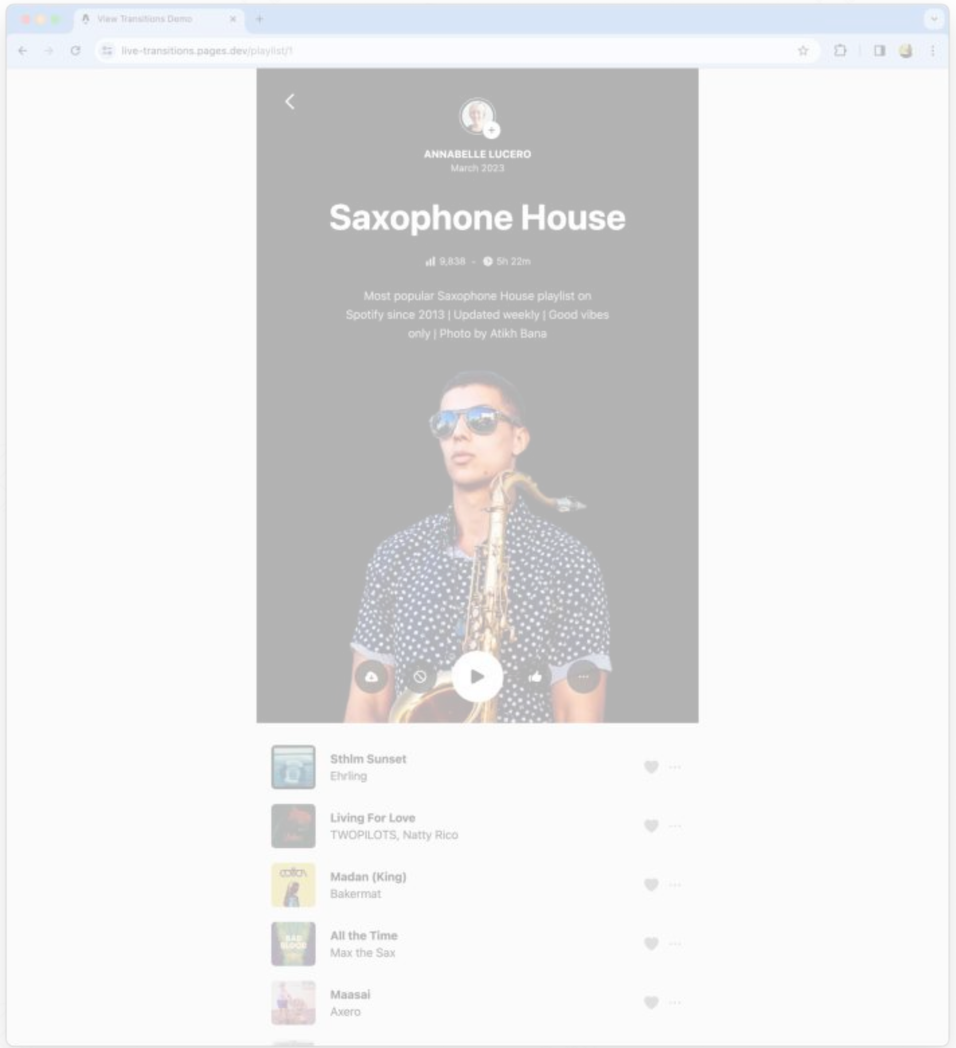

CSS
It's a UNIX system. I know this.

```
::view-transition-group(*) {
  animation-duration: 1s;
}
```

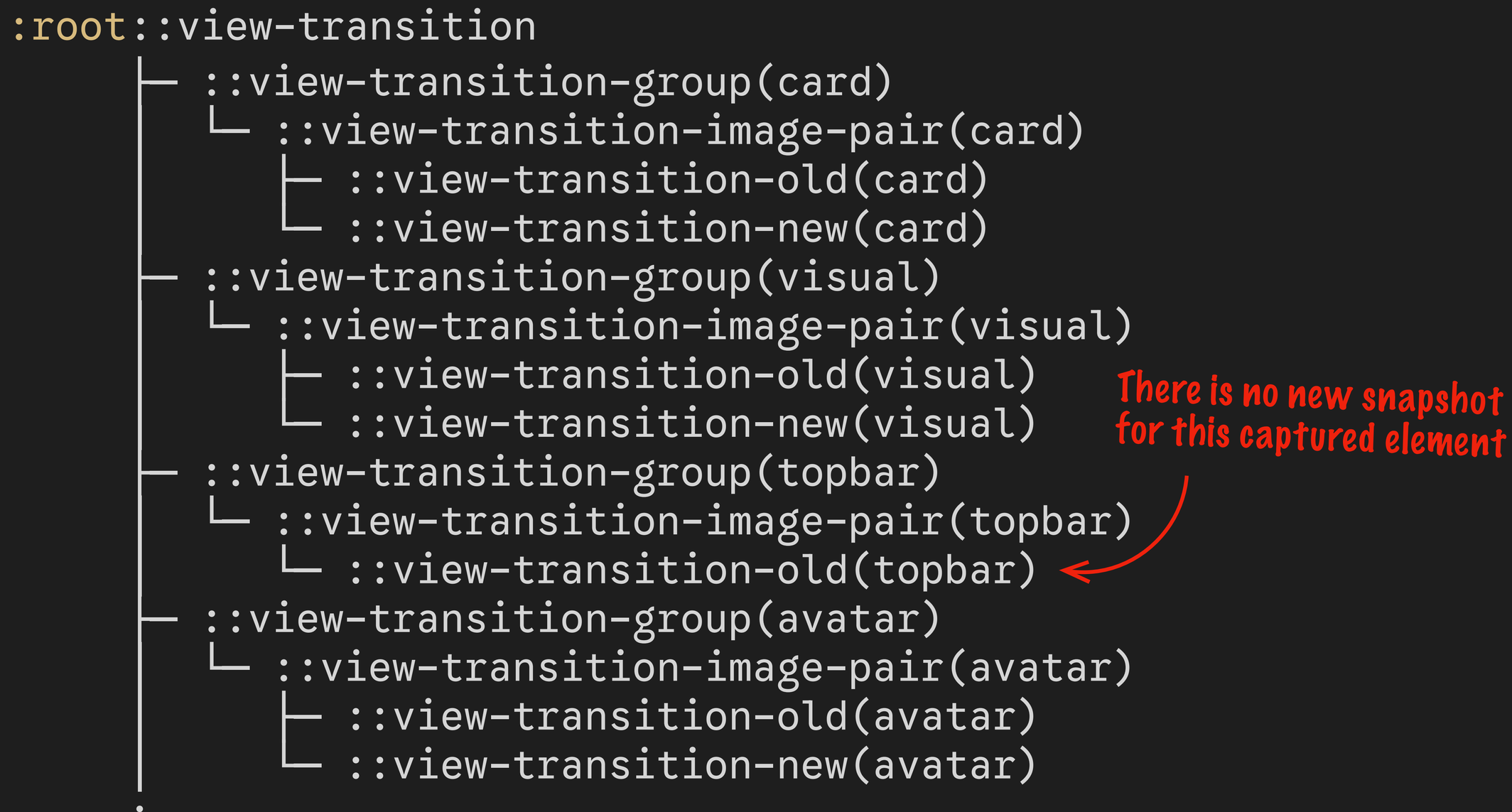
topbar




Overview

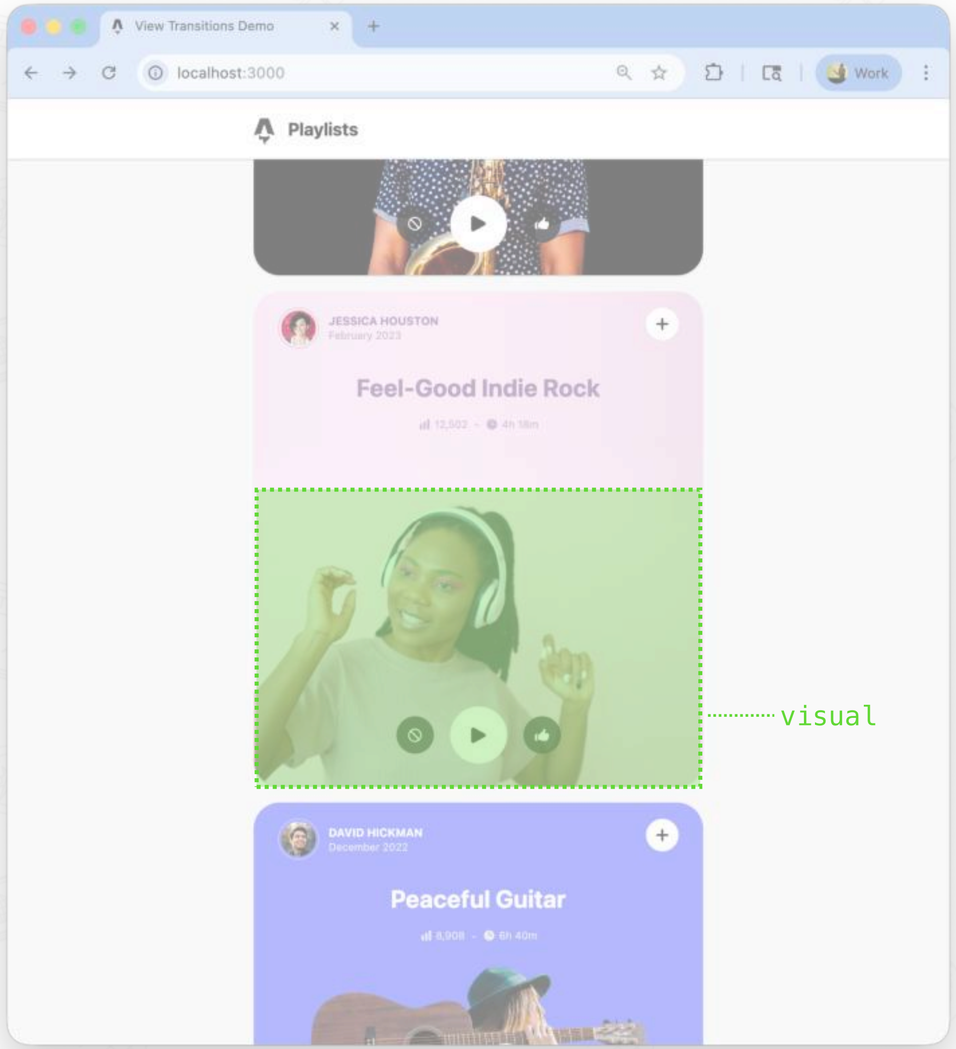



Detail

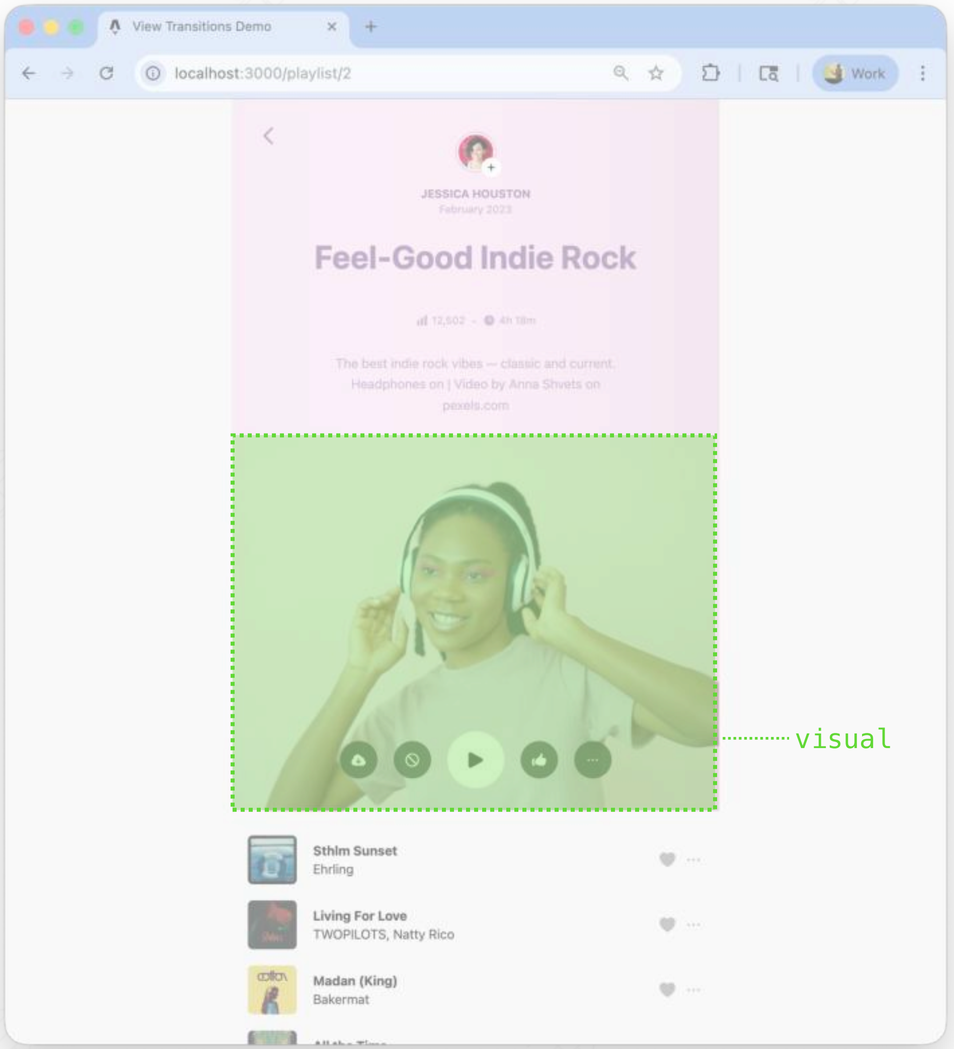

:root::view-transition
::view-transition-group(card)
::view-transition-image-pair(card)
::view-transition-old(card)
::view-transition-new(card)
::view-transition-group(visual)
::view-transition-image-pair(visual)
::view-transition-old(visual)
::view-transition-new(visual)
::view-transition-group(topbar)
::view-transition-image-pair(topbar)
::view-transition-old(topbar)
::view-transition-group(avatar)
::view-transition-image-pair(avatar)
::view-transition-old(avatar)
::view-transition-new(avatar)
There is no new snapshot for this captured element

```
::view-transition-new(topbar):only-child {
    animation: .25s cubic-bezier(.4,0,.2,1) both slide-down;
}

::view-transition-old(topbar):only-child {
    animation: .25s cubic-bezier(.4,0,.2,1) both slide-up;
}
```

*Custom CSS (Snippet)*




Overview




Detail

The new snapshot is live

`::view-transition-old(visual)`

`::view-transition-new(visual)`

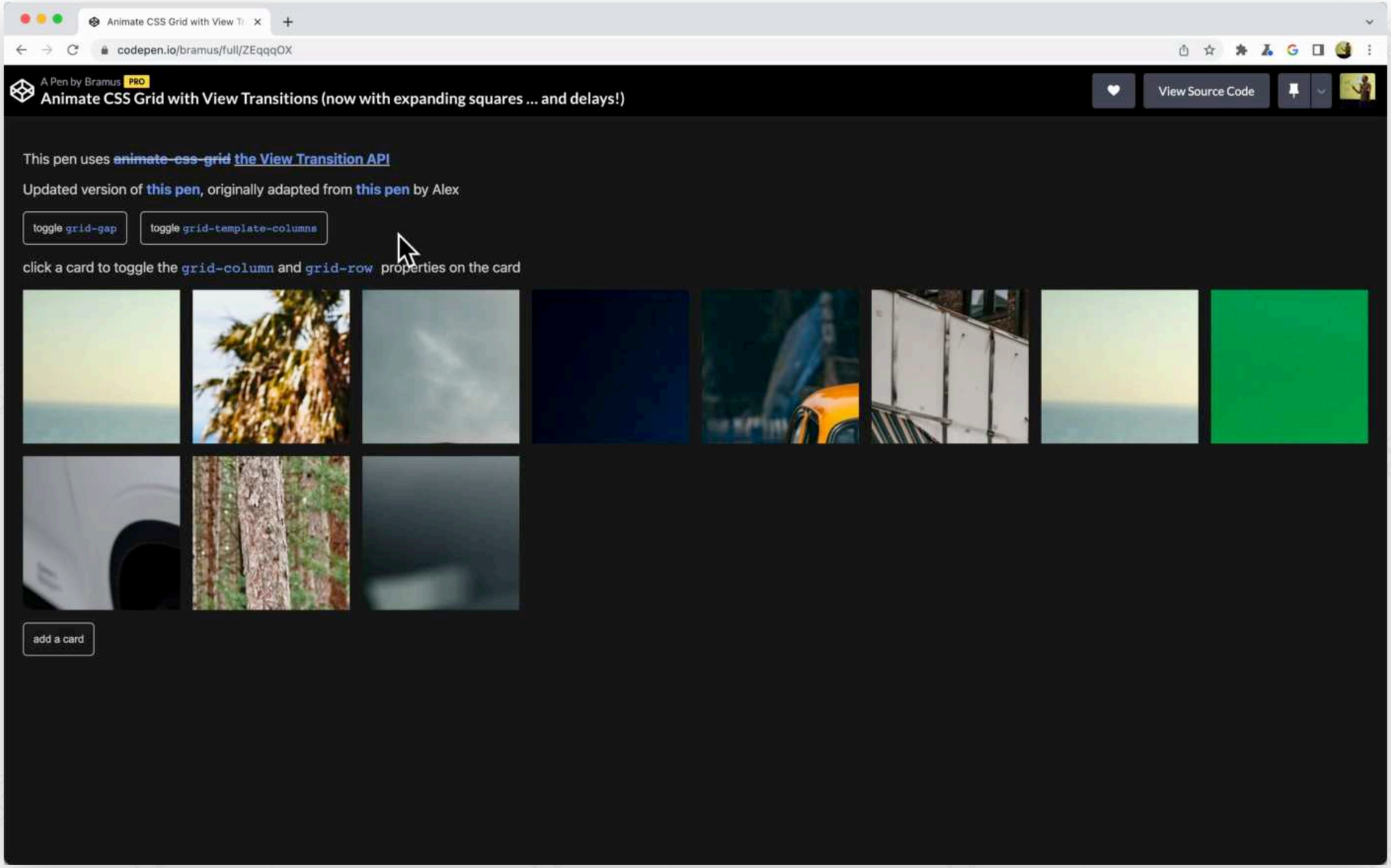
```
::view-transition-old(visual) {
    display: none; /* Hide the old snapshot */
}

::view-transition-new(visual) {
    animation: none; /* Don’t fade-in the new snapshot */
}
```

*Custom CSS (Snippet)*

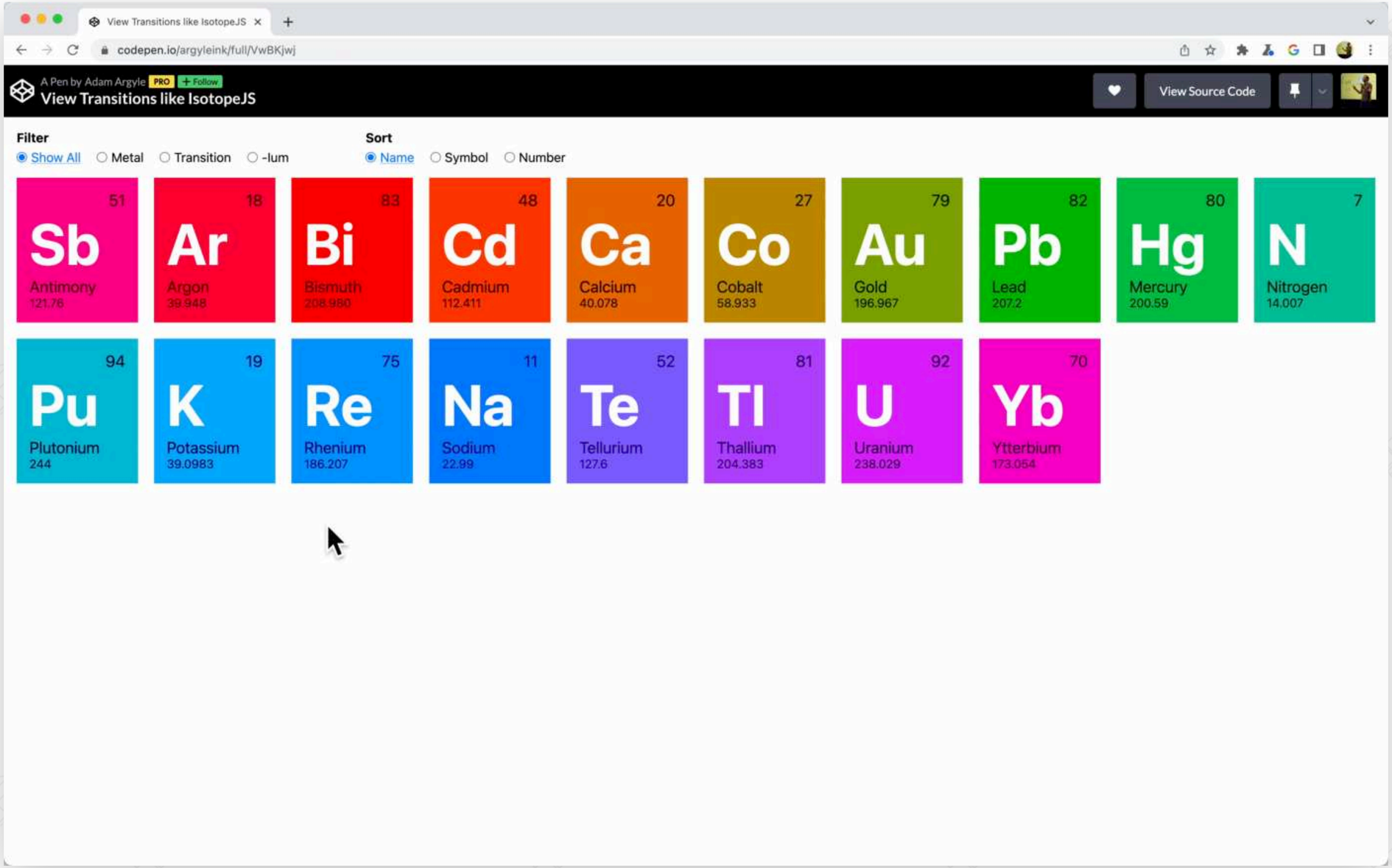
# View Transitions

## tl;dr

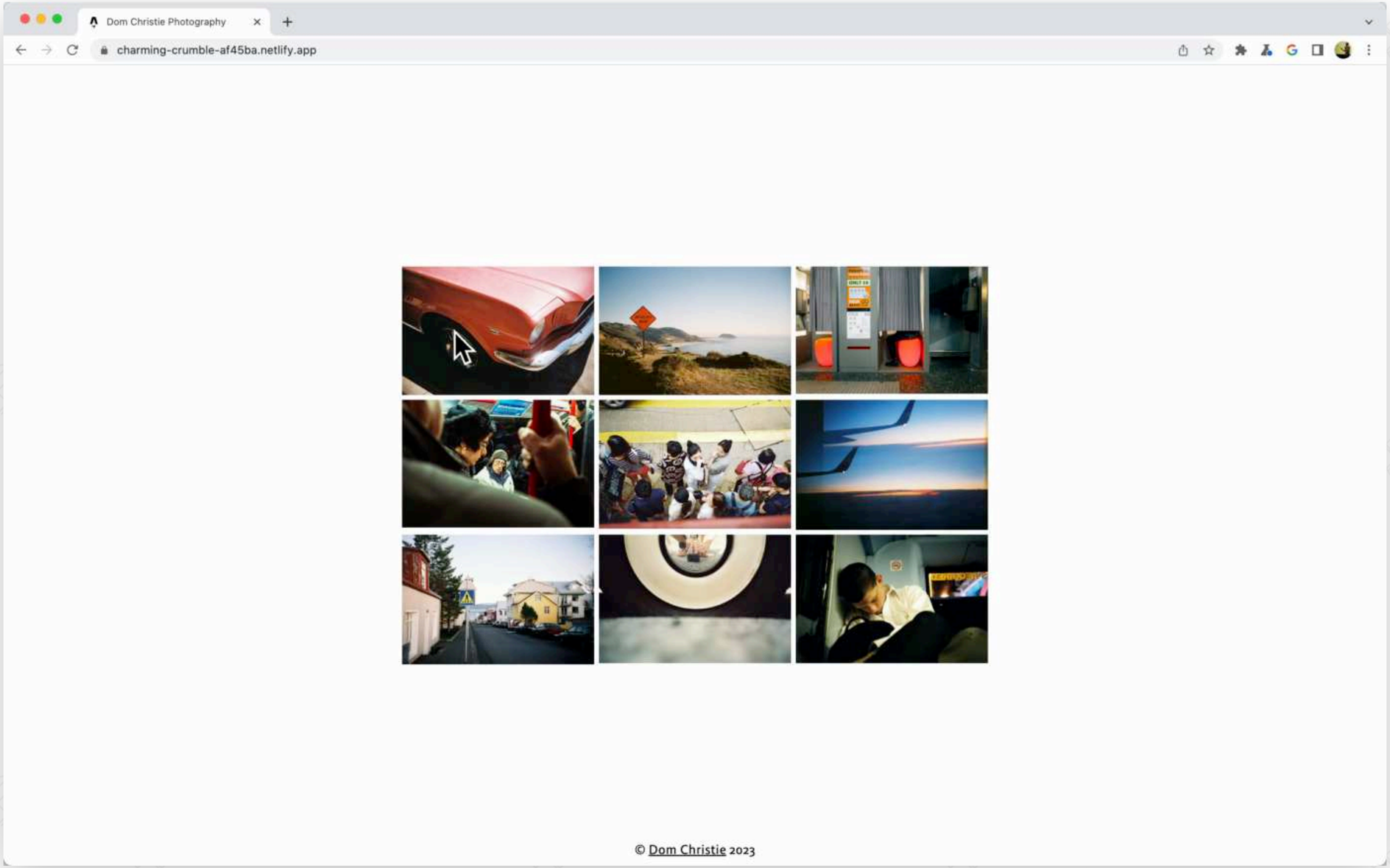
1. Identify and Name Elements
2. Trigger the View Transition
   - Snapshots Before
   - Pause Rendering
   - Update DOM
   - Snapshots After
   - Pseudo-tree construction
3. Customize the animations *(optional)*
   - Resume Rendering
   - Run the animations



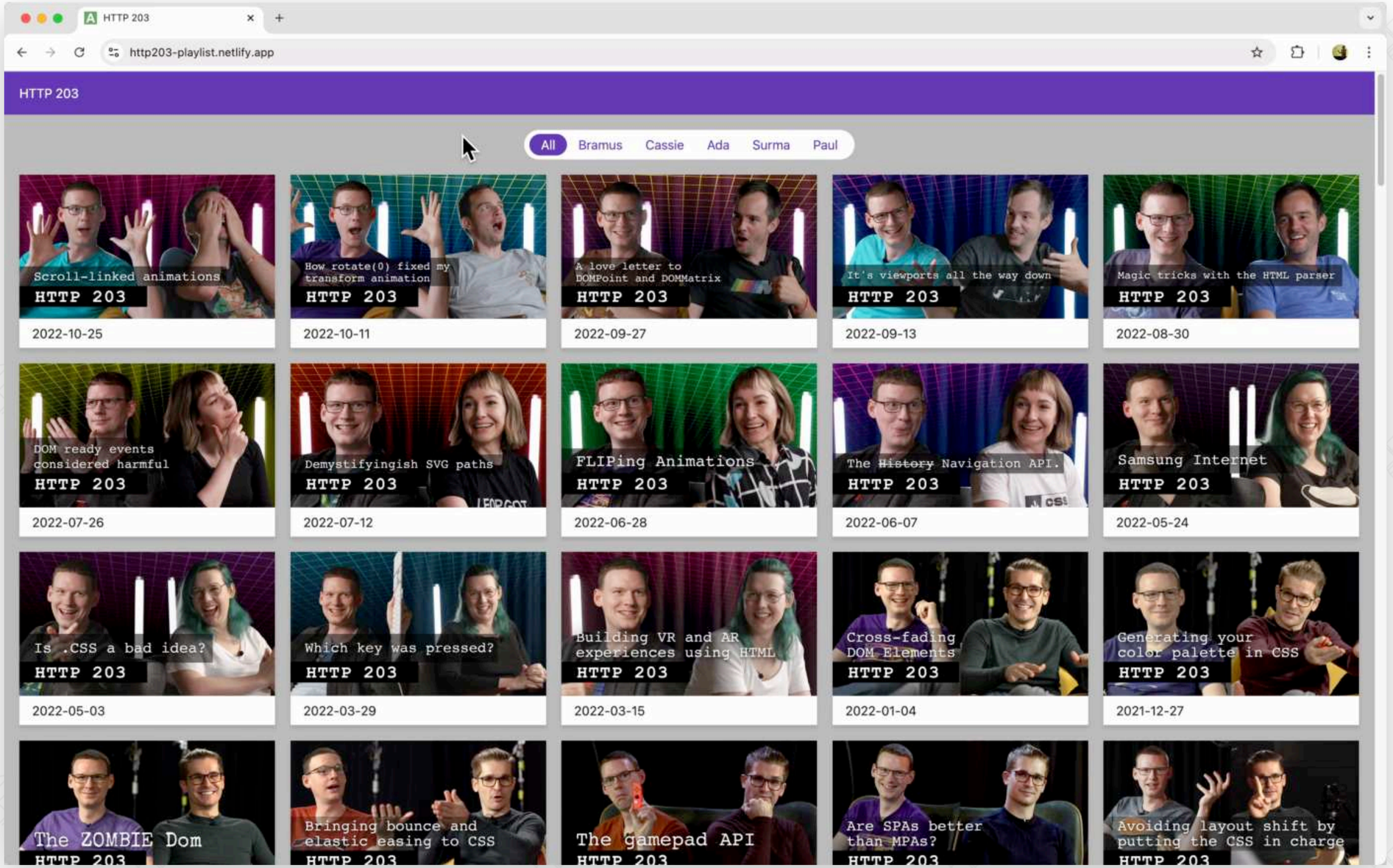

https://codepen.io/bramus/full/ZEqqqOX



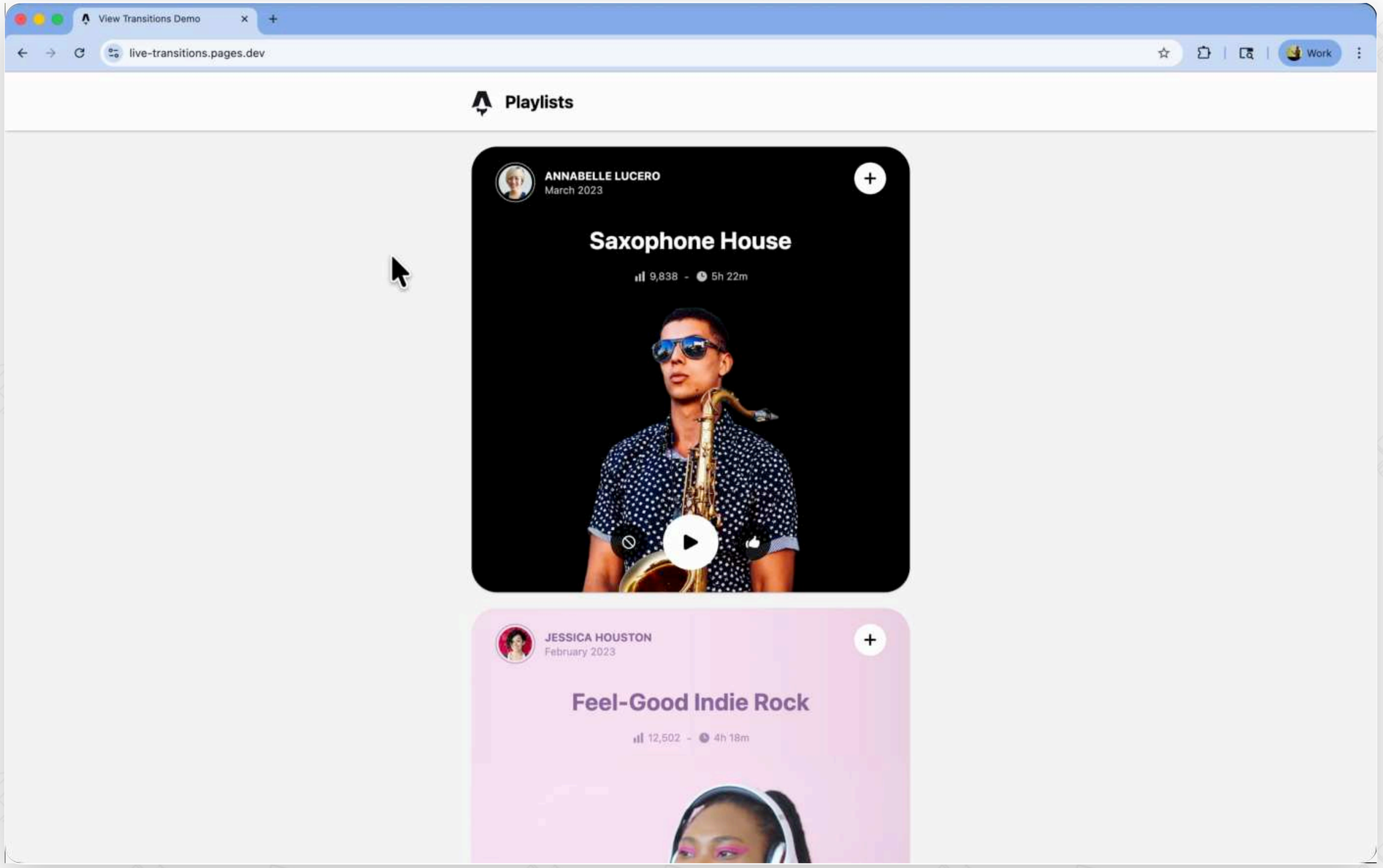

https://codepen.io/argyleink/full/VwBKjwj



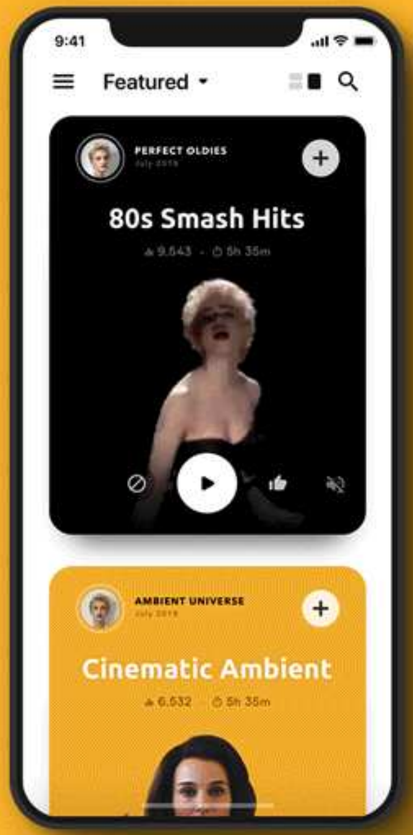

https://charming-crumble-af45ba.netlify.app/ by Dom Christie




https://http203-playlist.netlify.app/



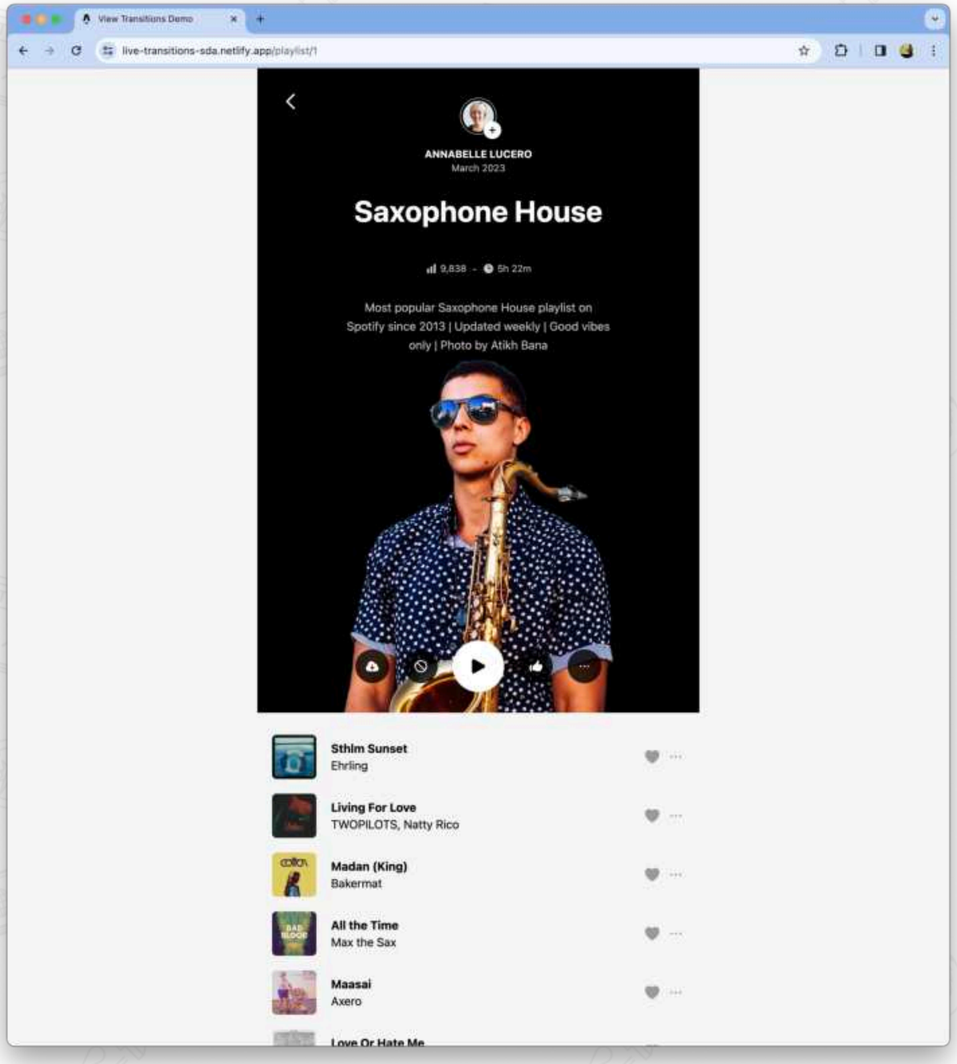

https://live-transitions.pages.dev/ by Maxi Ferreira



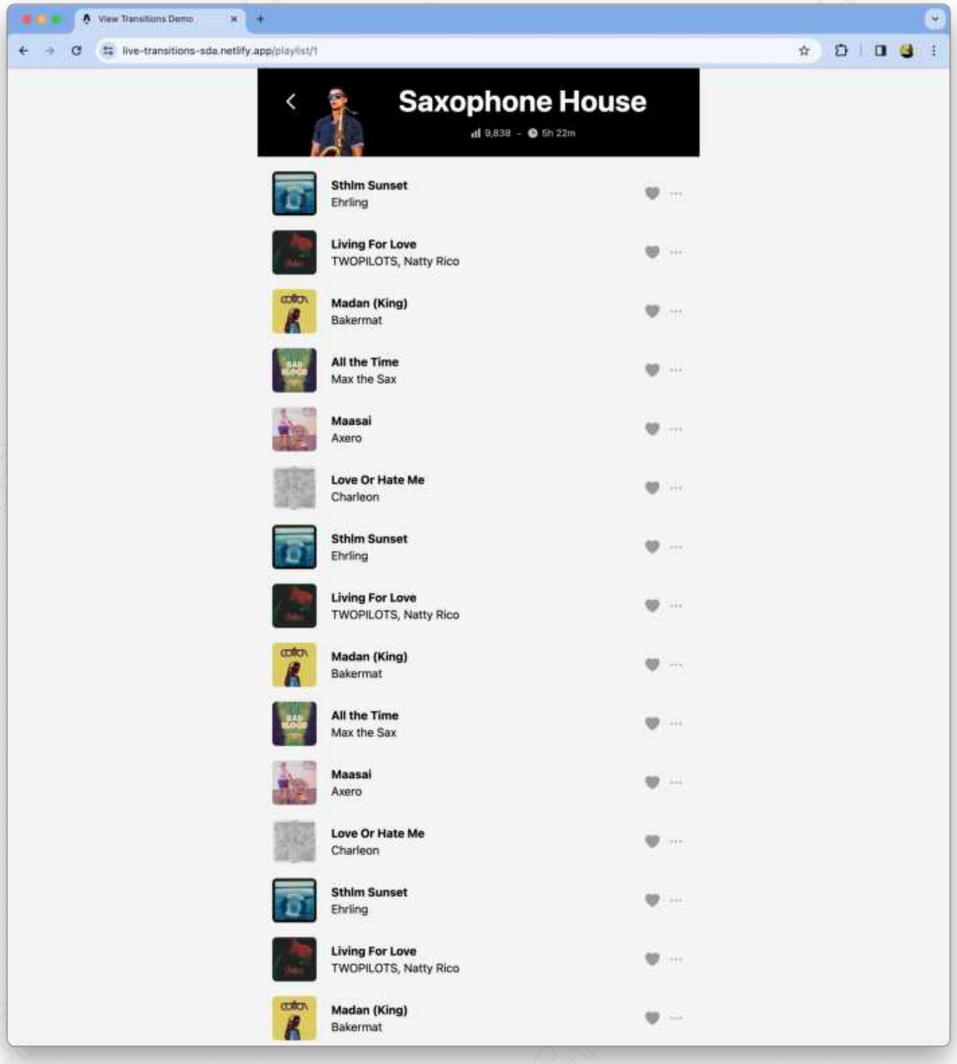

*Music Playlist App Interaction* by *Ehsan Rahimi*
*https://dribbble.com/ehsancinematic*

*“That’s a transition between two states!”*

*Me, on a bright day*


View Transitions Demo
live-transitions-sda.netlify.app/playlist/1
ANNABELLE LUCERO
March 2023
Saxophone House
9,838 · 5h 22m
Most popular Saxophone House playlist on Spotify since 2013 | Updated weekly | Good vibes only | Photo by Atikh Bana
Sthlm Sunset
Ehrling
Living For Love
TWOPILOTS, Natty Rico
Madan (King)
Bakermat
All the Time
Max the Sax
Maasai
Axero

Large

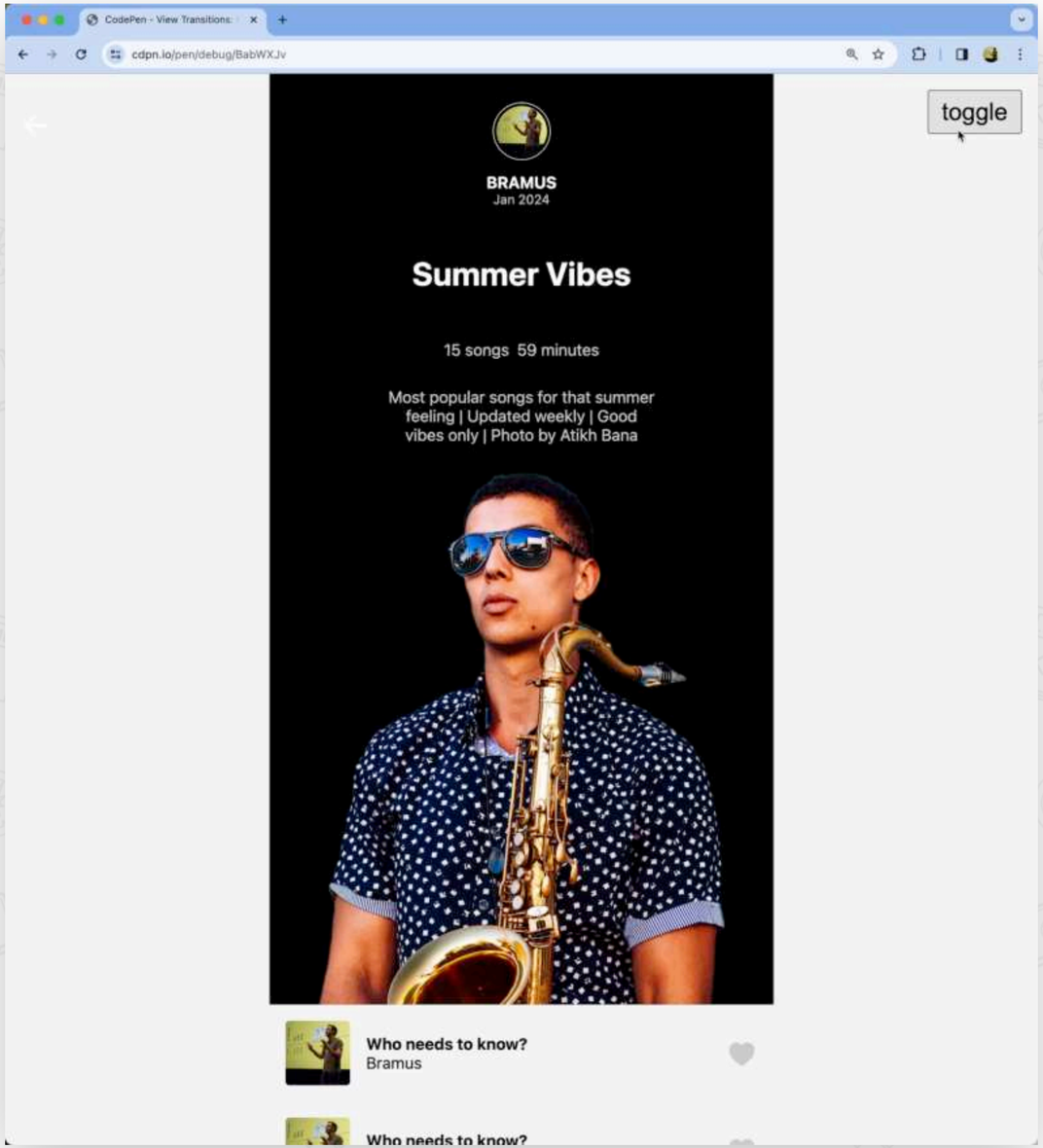

View Transitions Demo
live-transitions-sda.netlify.app/playlist/1
Saxophone House
9,838 · 5h 22m
Sthlm Sunset
Ehrling
Living For Love
TWOPILOTS, Natty Rico
Madan (King)
Bakermat
All the Time
Max the Sax
Maasai
Axero
Love Or Hate Me
Charleon
Sthlm Sunset
Ehrling
Living For Love
TWOPILOTS, Natty Rico
Madan (King)
Bakermat
All the Time
Max the Sax
Maasai
Axero
Love Or Hate Me
Charleon
Sthlm Sunset
Ehrling
Living For Love
TWOPILOTS, Natty Rico
Madan (King)
Bakermat

Small

```
.card {
    display: grid;
    grid-template:
        'meta' auto
        'title' 100px
        'moremeta' auto
        'description' 80px
        'image' auto / auto;

    /* … */
}
```

```
.card.small {
    grid-template:
        'image title' 1fr
        'image moremeta' 1fr / 80px auto;

    /* … */
}
```

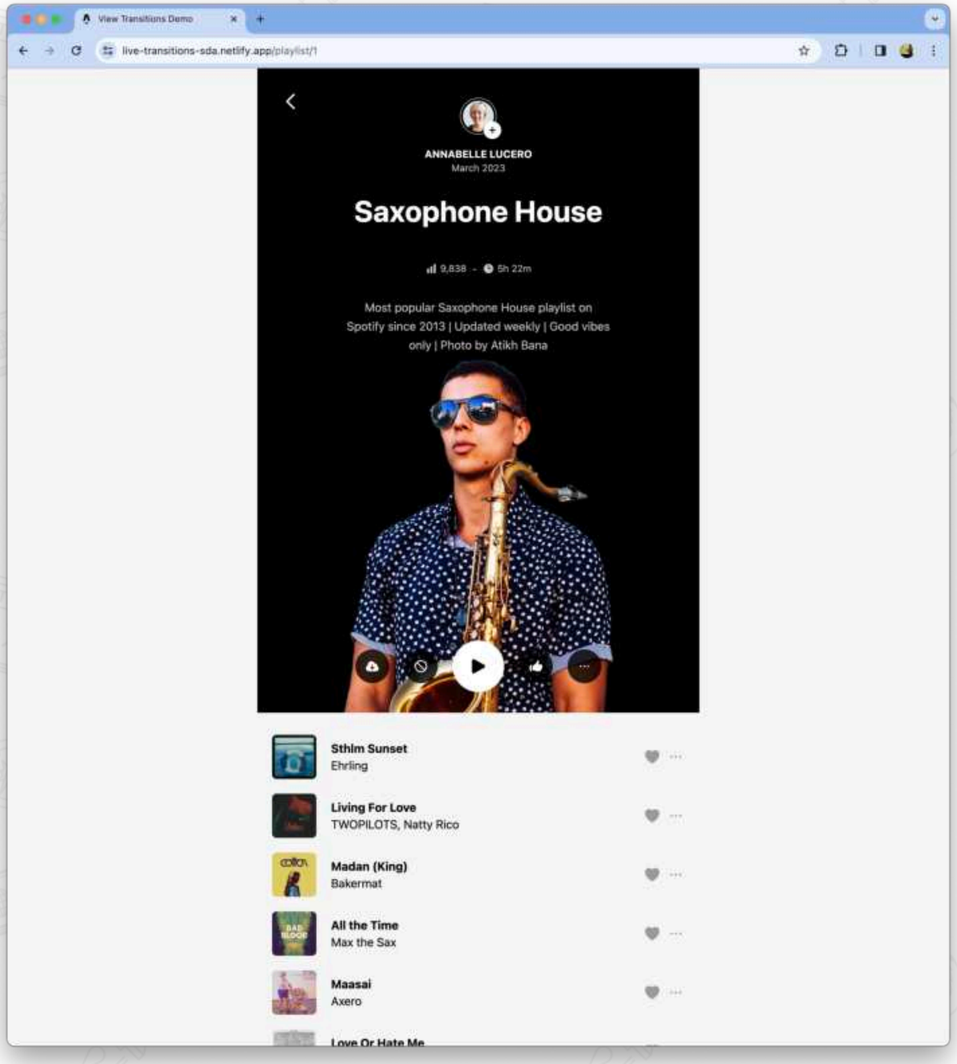
```
const toggleCard = () => {
    if (!document.startViewTransition) {
        $card.classList.toggle('small');
        return;
    }

    document.startViewTransition(() => {
        $card.classList.toggle('small');
    });
}

$button.addEventListener('click', async e => {
    e.preventDefault();
    toggleCard();
});
```



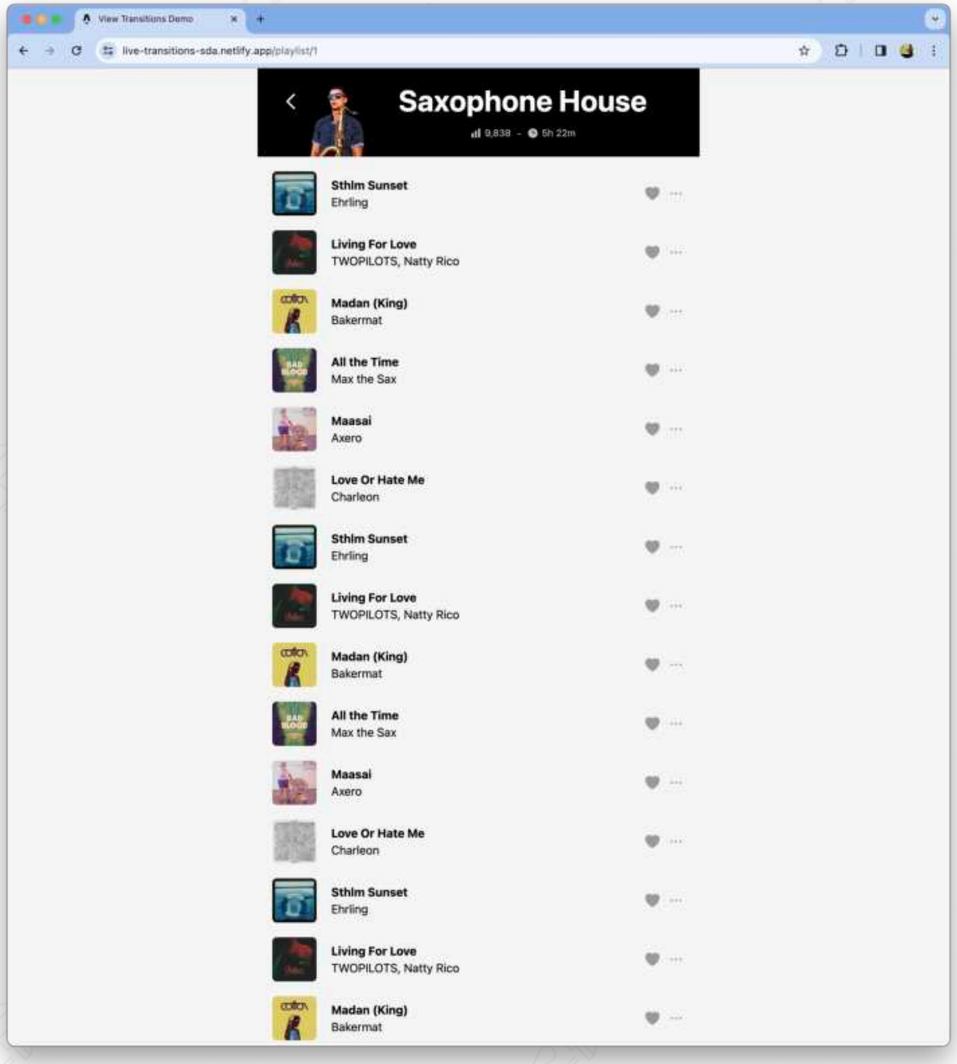

https://codepen.io/bramus/full/BabWXJv

# 1. Identify and name elements to transition

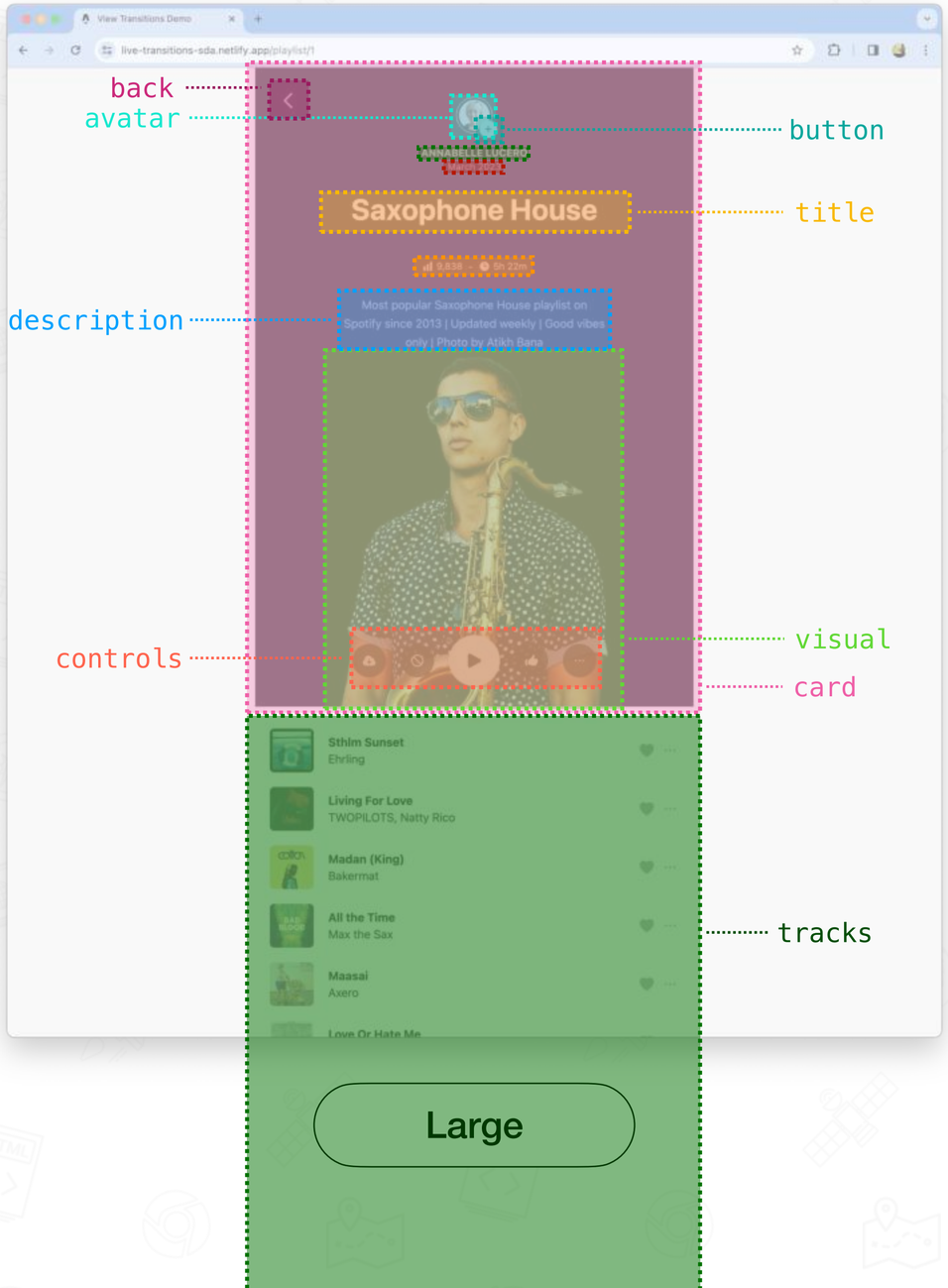
CSS `view-transition-name` property

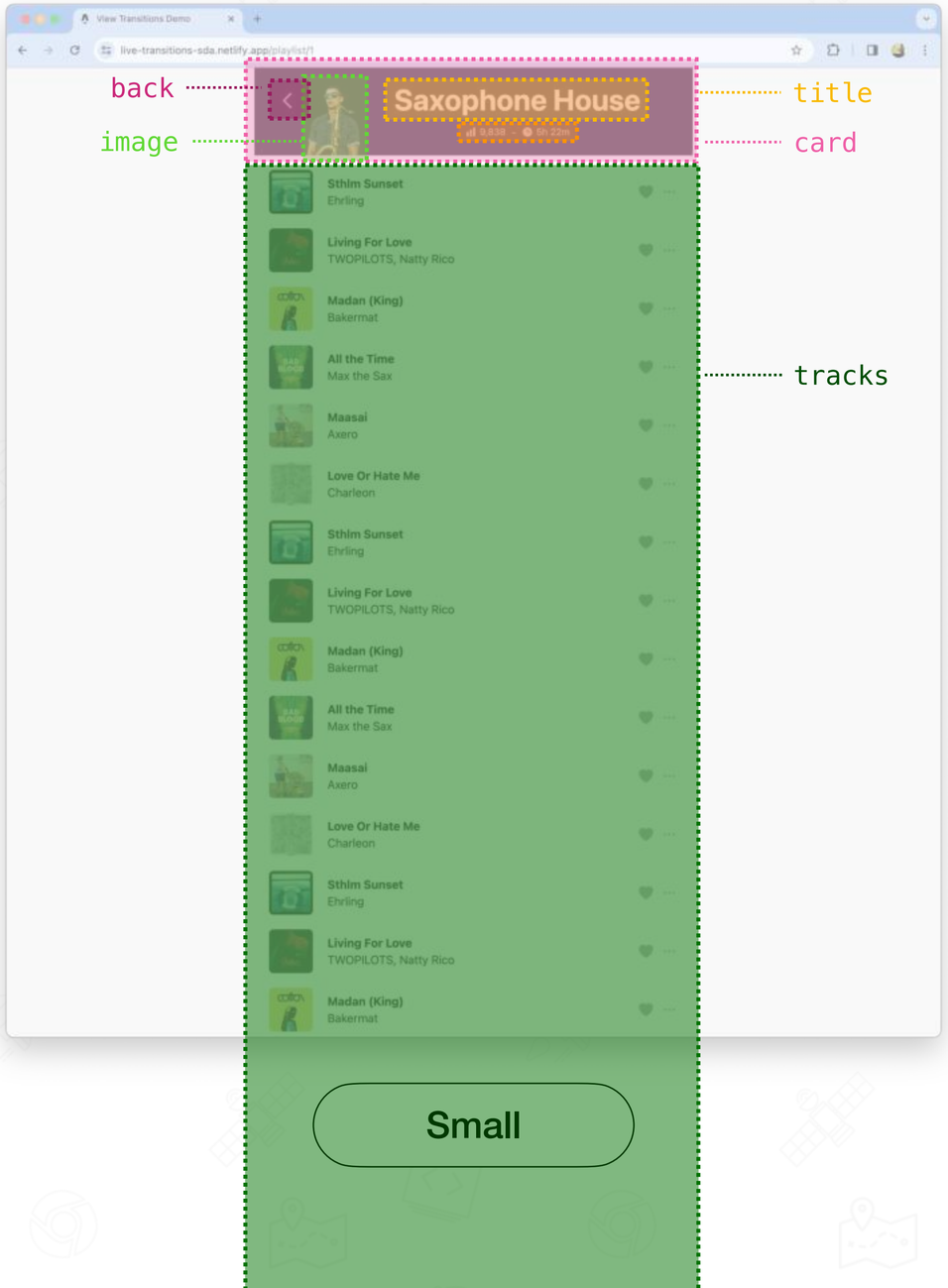

View Transitions Demo
live-transitions-sda.netlify.app/playlist/1
ANNABELLE LUCERO
March 2023
Saxophone House
9,838 · 5h 22m
Most popular Saxophone House playlist on Spotify since 2013 | Updated weekly | Good vibes only | Photo by Atikh Bana
Sthlm Sunset
Ehrling
Living For Love
TWOPILOTS, Natty Rico
Madan (King)
Bakermat
All the Time
Max the Sax
Maasai
Axero

Large


View Transitions Demo
live-transitions-sda.netlify.app/playlist/1
Saxophone House
9,838 · 5h 22m
Sthlm Sunset
Ehrling
Living For Love
TWOPILOTS, Natty Rico
Madan (King)
Bakermat
All the Time
Max the Sax
Maasai
Axero
Love Or Hate Me
Charleon
Sthlm Sunset
Ehrling
Living For Love
TWOPILOTS, Natty Rico
Madan (King)
Bakermat
All the Time
Max the Sax
Maasai
Axero
Love Or Hate Me
Charleon
Sthlm Sunset
Ehrling
Living For Love
TWOPILOTS, Natty Rico
Madan (King)
Bakermat

Small


back
avatar
button
Saxophone House
title
description
Most popular Saxophone House playlist on Spotify since 2013 | Updated weekly | Good vibes only | Photo by Atikh Bana
controls
visual
card
Sthlm Sunset
Ehrling
Living For Love
TWOPILOTS, Natty Rico
Madan (King)
Bakermat
All the Time
Max the Sax
Maasai
Axero
tracks
Large


back
image
Saxophone House
title
card
Sthlm Sunset
Ehrling
Living For Love
TWOPILOTS, Natty Rico
Madan (King)
Bakermat
All the Time
Max the Sax
Maasai
Axero
tracks
Small

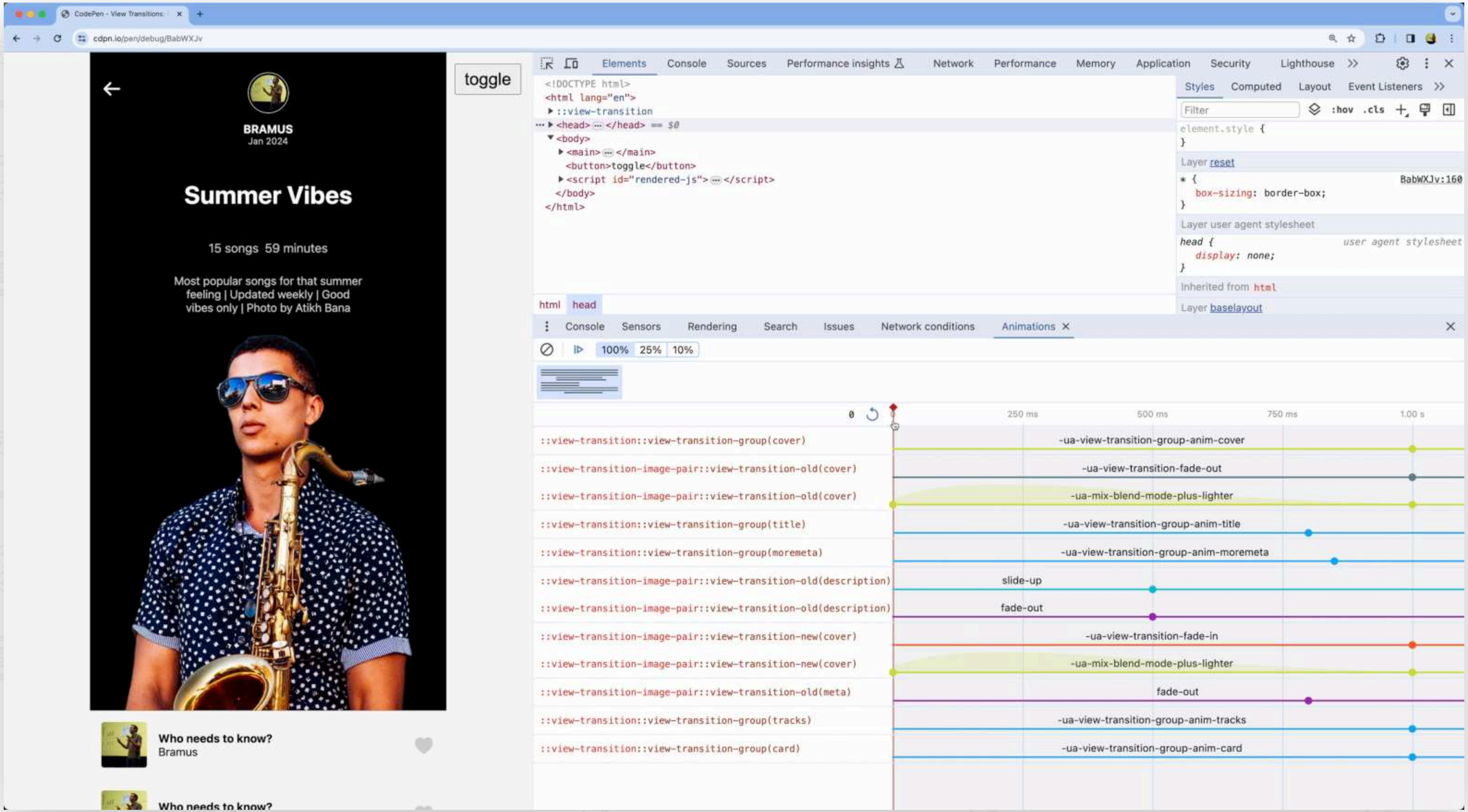
# 2. Trigger the View Transition

Same-Document or Cross-Document

```
const toggleCard = () => {
    if (!document.startViewTransition) {
        $card.classList.toggle('small');
        return;
    }

    document.startViewTransition(() => {
        $card.classList.toggle('small');
    });
}

$button.addEventListener('click', async e => {
    e.preventDefault();
    toggleCard();
});
```

# 3. Customize the animations

*(Optional)*




https://codepen.io/bramus/full/BabWXJv

```
    but elements in that card only for a certain part of that entire duration.
    To achieve this, the durations and delays are expressed as fractions, which
    are then used in a calcuation to get the actual duration in seconds.
*/
::view-transition {
    --vt-base-duration: 1s;

    --vt-description-duration: 0.5;
    --vt-description-delay: 0;

    --vt-moremeta-duration: 0.65;
    --vt-moremeta-delay: 0.2;

    --vt-title-duration: 0.6;
    --vt-title-delay: 0.2;

    --vt-meta-duration: 0.5;
    --vt-meta-delay: 0.3;
}

/* Apply base duration to all */
::view-transition-group(*) {
    animation-duration: var(--vt-base-duration);
}
```

```
    --vt-meta-duration: 0.5;
    --vt-meta-delay: 0.3;
}

/* Apply base duration to all */
::view-transition-group(*) {
    animation-duration: var(--vt-base-duration);
}

/* Also inherit the delay from the group onto the child pseudos */
::view-transition-image-pair(*),
::view-transition-new(*),
::view-transition-old(*) {
    animation-delay: inherit;
}

/* Allow cursor to send events to underlying page while a VT is running */
::view-transition {
    pointer-events: none;
}

/* Some keyframes to use */
@keyframes slide-up { to { translate: 0 -100%; }}
@keyframes slide-down { from { translate: 0 -100%; }}
```

```
::view-transition-group(*) {
    animation-duration: var(--vt-base-duration);
}

/* Also inherit the delay from the group onto the child pseudos */
::view-transition-image-pair(*),
::view-transition-new(*),
::view-transition-old(*) {
    animation-delay: inherit;
}

/* Allow cursor to send events to underlying page while a VT is running */
::view-transition {
    pointer-events: none;
}

/* Some keyframes to use */
@keyframes slide-up { to { translate: 0 -100%; }}
@keyframes slide-down { from { translate: 0 -100%; }}
@keyframes fade-out { to { opacity: 0; }}
@keyframes fade-in { from { opacity: 0; }}

/* Capture all these individual elements instead. Also, don't capture the root. */
:root {
    view-transition-name: none;
}
```

```
::view-transition-old(*) {
    animation-delay: inherit;
}

/* Allow cursor to send events to underlying page while a VT is running */
::view-transition {
    pointer-events: none;
}

/* Some keyframes to use */
@keyframes slide-up { to { translate: 0 -100%; }}
@keyframes slide-down { from { translate: 0 -100%; }}
@keyframes fade-out { to { opacity: 0; }}
@keyframes fade-in { from { opacity: 0; }}

/* Capture all these individual elements instead. Also, don't capture the root. */
:root {
    view-transition-name: none;
}
.card {
    view-transition-name: card;
}
.meta {
    view-transition-name: meta;
}
```

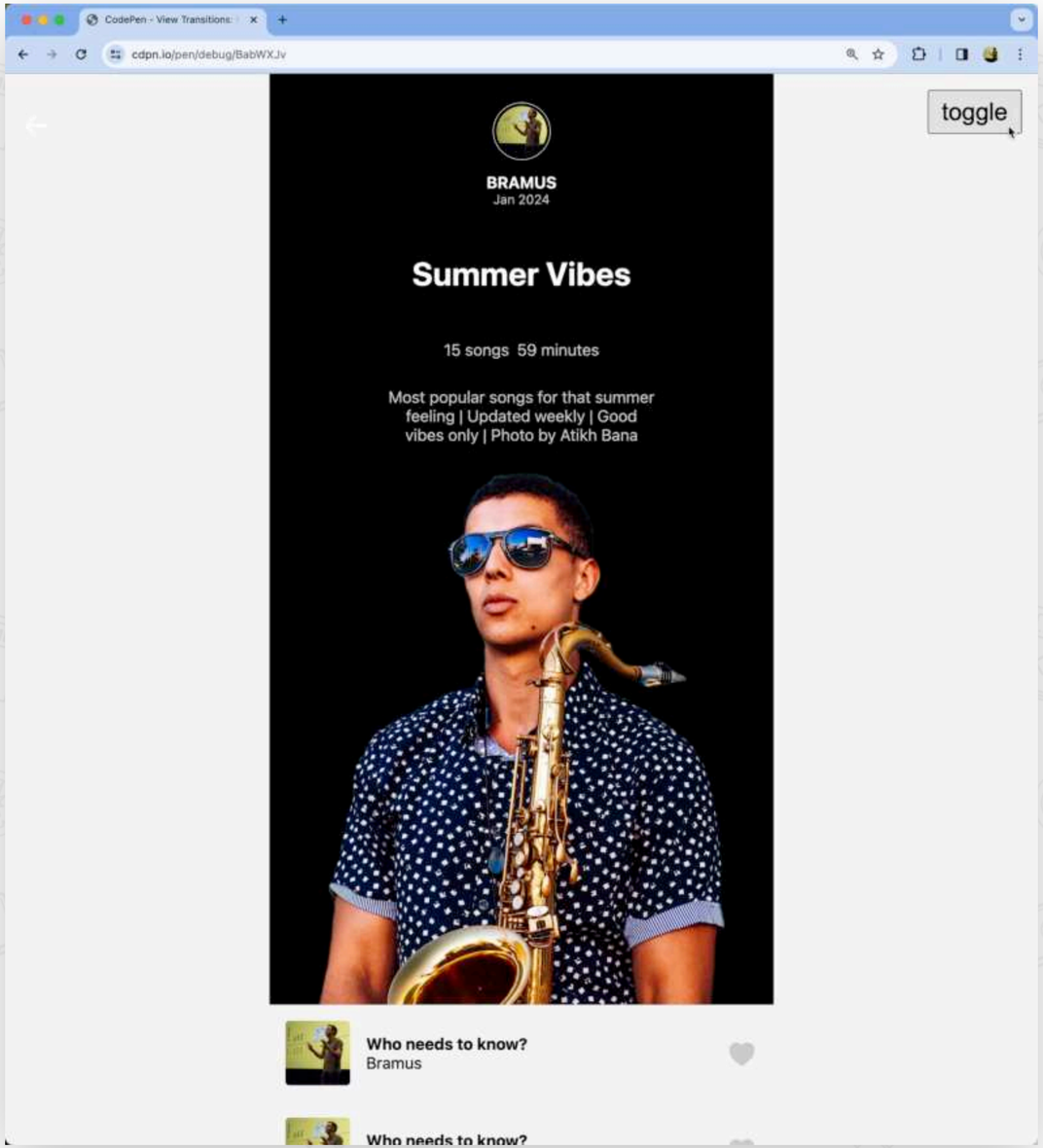
```
/* Capture all these individual elements instead. Also, don’t capture the root. */
:root {
    view-transition-name: none;
}
.card {
    view-transition-name: card;
}
.meta {
    view-transition-name: meta;
}
.title {
    view-transition-name: title;
}
.moremeta {
    view-transition-name: moremeta;
}
.description {
    view-transition-name: description;
}
.cover {
    view-transition-name: cover;
}
.tracks {
    view-transition-name: tracks;
}
```

```
        view-transition-name: description;
    }
    .cover {
        view-transition-name: cover;
    }
    .tracks {
        view-transition-name: tracks;
    }

    /* The card itself should just shrink, not fade */
    ::view-transition-group(card) {
        overflow: clip;
    }
    ::view-transition-new(card),
    ::view-transition-old(card) {
        animation-name: none;
    }

    /* The title, moremeta, and tracks remain the same. Therefore, don't fade but
immediately use the new snapshot */
    ::view-transition-new(title),
    ::view-transition-new(moremeta),
    ::view-transition-new(tracks) {
        animation-name: none;
    }
```

```
        overflow: clip;
    }
    ::view-transition-new(card),
    ::view-transition-old(card) {
        animation-name: none;
    }

    /* The title, moremeta, and tracks remain the same. Therefore, don't fade but
immediately use the new snapshot */
    ::view-transition-new(title),
    ::view-transition-new(moremeta),
    ::view-transition-new(tracks) {
        animation-name: none;
    }
    ::view-transition-old(title),
    ::view-transition-old(moremeta),
    ::view-transition-old(tracks)  {
        display: none;
    }

    /* Slide and fade description. */
    ::view-transition-old(description):only-child {
        animation-duration: calc(var(--vt-base-duration) * var(--vt-description-duration));
        animation-delay: calc(var(--vt-base-duration) * var(--vt-description-delay));
        animation-name: slide-up, fade-out;
```

```
    }
    ::view-transition-old(title),
    ::view-transition-old(moremeta),
    ::view-transition-old(tracks)  {
        display: none;
    }

    /* Slide and fade description. */
    ::view-transition-old(description):only-child {
        animation-duration: calc(var(--vt-base-duration) * var(--vt-description-duration));
        animation-delay: calc(var(--vt-base-duration) * var(--vt-description-delay));
        animation-name: slide-up, fade-out;
    }
    ::view-transition-new(description):only-child {
        animation-duration: calc(var(--vt-base-duration) * var(--vt-description-duration));
        animation-delay: calc(var(--vt-base-duration) * (1 - (var(--vt-description-delay) +
var(--vt-description-duration))));
        animation-name: slide-down, fade-in;
    }

    /* Set timing for various components */
    ::view-transition-group(moremeta) {
        animation-duration: calc(var(--vt-base-duration) * var(--vt-moremeta-duration));
        animation-delay: calc(var(--vt-base-duration) * var(--vt-moremeta-delay));
    }
```

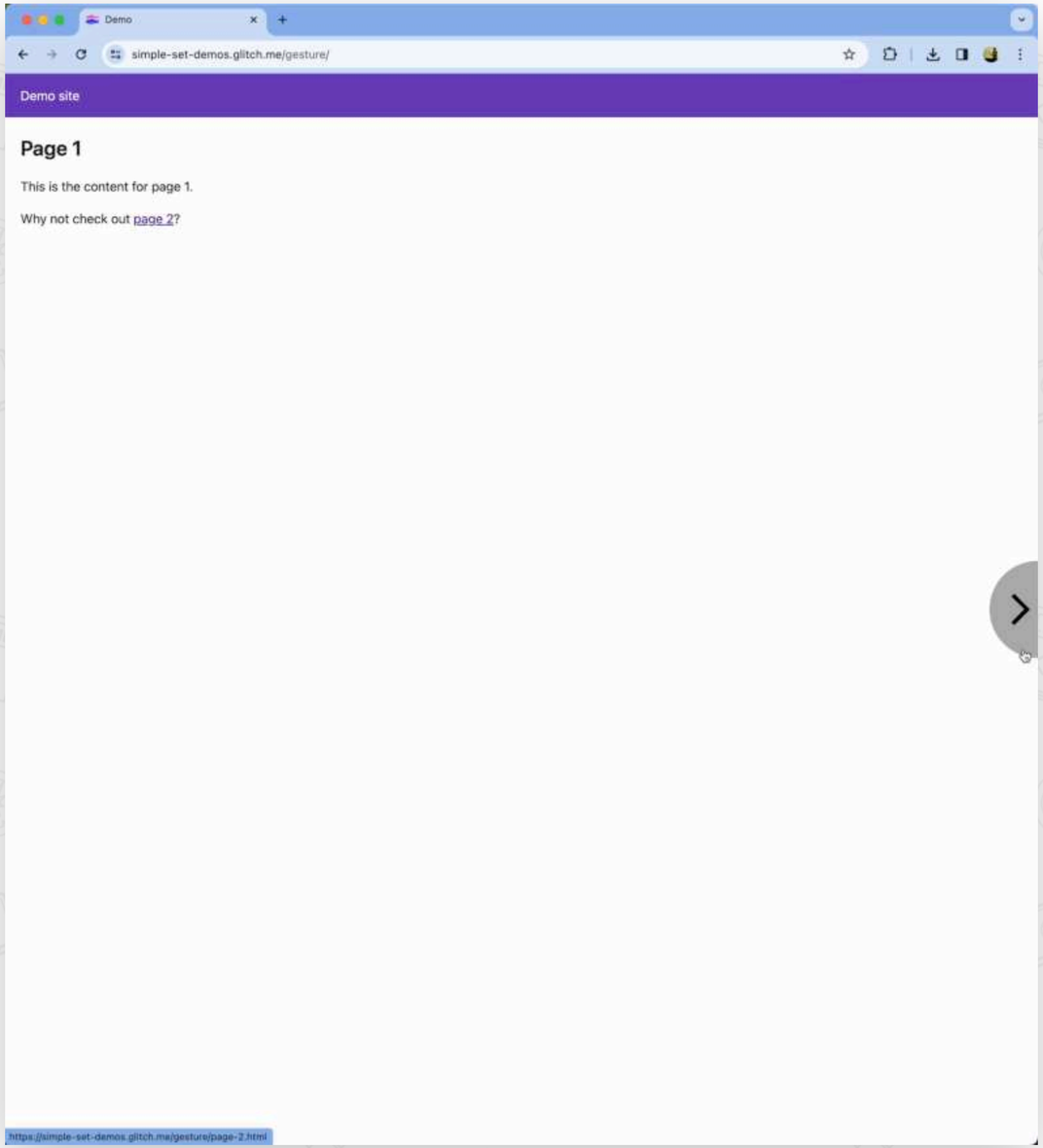
```
    }
    :root:not(:has(div.small))::view-transition-group(meta) {
        animation-delay: calc(var(--vt-base-duration) * (1 - (var(--vt-meta-delay) + var(--
vt-meta-duration))));
    }
    ::view-transition-old(meta):only-child {
        animation-name: fade-out;
    }
    ::view-transition-new(meta):only-child {
        animation-name: fade-in;
    }

    ::view-transition-group(tracks) {
        z-index: -1;
    }
}
```




https://codepen.io/bramus/full/BabWXJv

# “How can I make this draggable?”

*Me, ready for the next step*




*https://simple-set-demos.glitch.me/gesture/ by Jake Archibald*

# Pointer Events API

55

59

13

https://developer.mozilla.org/docs/Web/API/Pointer_events

```
document.addEventListener("pointerdown", (downEvent) => {
    // 1. Determine the needed drag direction

    // 2. Record startX/startY position
});
```

```
document.addEventListener("pointermove", async (downEvent) => {
    // 1. Record currentX/currentY position

    // 2. If none exists, start a View Transition
          and pause all its animations immediately

    // 3. Update the currentTime of VT's animations
          based on the drag distance
});
```

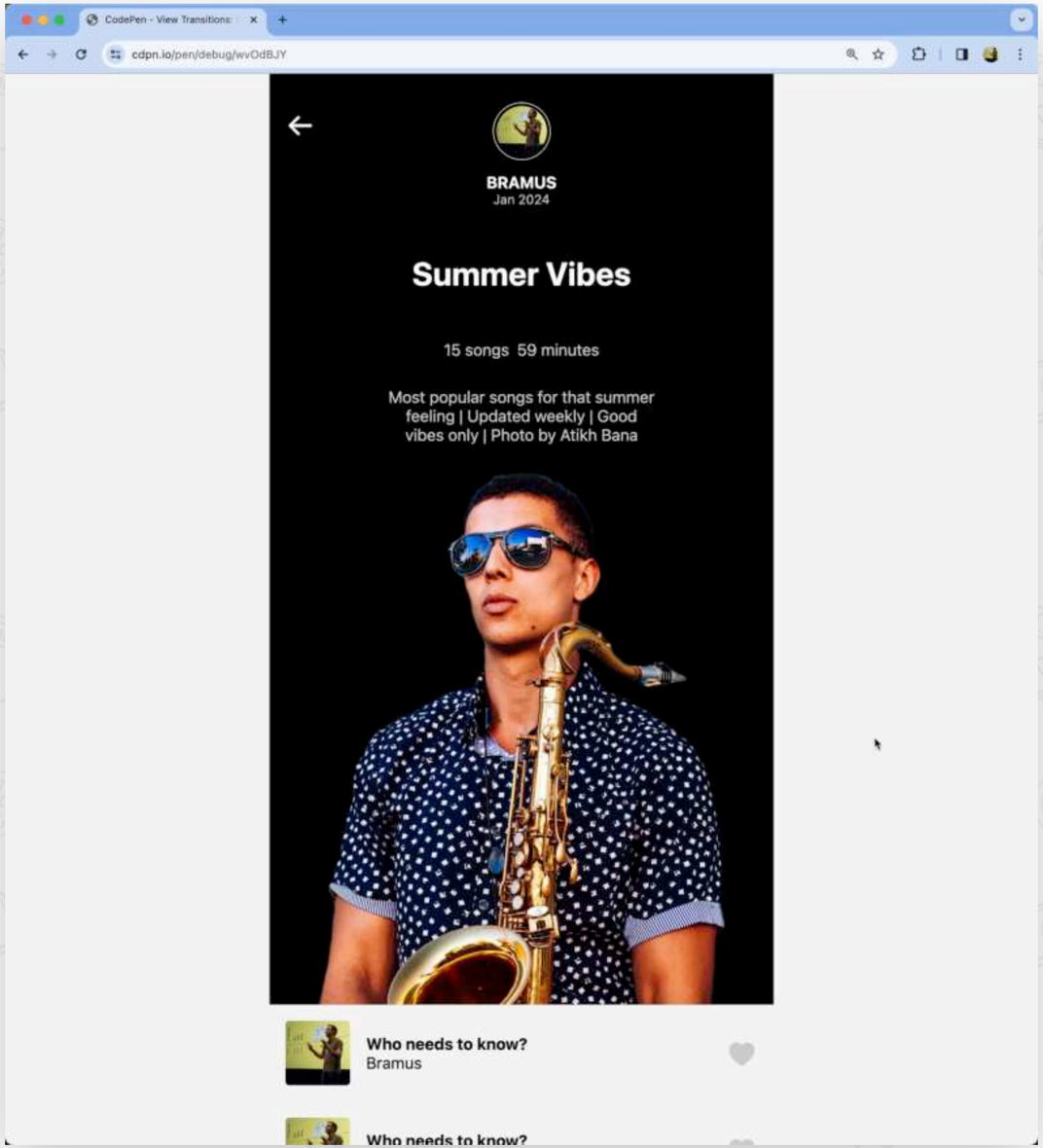
```
document.addEventListener("pointerup", async (downEvent) => {
    // 1. Play the View Transition’s animations
          forwards of backwards
          based on the last drag direction

    // 2. When the VT is done, reset all values
});
```

# Other View Transitions Tricks / Features

```css
/* Don’t capture the root */
:root {
  view-transition-name: none;
}

/* Allow pointer events to reach the document while a VT is ongoing
*/
::view-transition {
  pointer-events: none;
}
```

https://www.bram.us/2025/01/29/view-transitions-page-interactivity/

```
const transition = document.startViewTransition(() => {
    // …
});

// Wait for update callback to be done
await transition.updateCallbackDone;
console.log('updateCallbackDone');

// Wait for the pseudo-elements to be created
await transition.ready;
console.log('ready');

// Wait for view transition to be done
await transition.finished;
console.log('finished');
```




https://codepen.io/bramus/full/wvOdBJY

```
// 2. If none exists, start a View Transition
      and pause all its animations immediately

activeViewTransition = document.startViewTransition(() => {
    document.querySelector('.card').classList.toggle('small');
});

await activeViewTransition.ready;

activeAnimations = document.getAnimations().filter((anim) =>
    anim.effect.target === document.documentElement &&
    anim.effect.pseudoElement?.startsWith("::view-transition")
);
for (const anim of activeAnimations) anim.pause();
```

```
// 3. Update the currentTime of VT's animations
      based on the drag distance

const baseDuration = 1000;
const dragDistance = determineDragDistance();

const dragDelta = ['up', 'down'].includes(neededDirection)
                ? Math.abs(currentY - startY)
                : Math.abs(currentX - startX);

const computedTime = dragDelta / dragDistance * baseDuration;
const clampedTime = clamp(0, computedTime, baseDuration);

for (const animation of activeAnimations) {
    animation.currentTime = clampedTime;
}
```

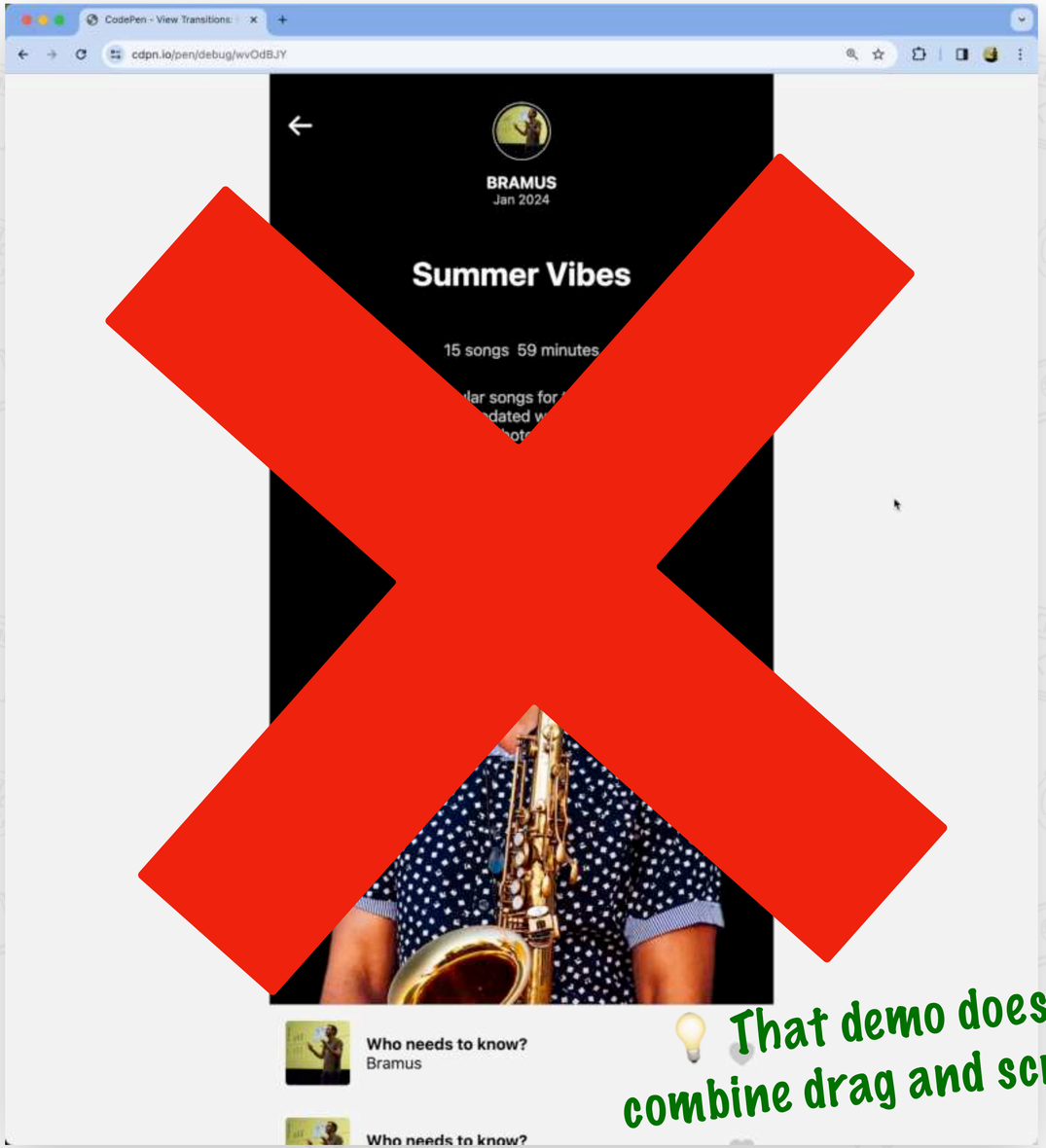
Feels very uncanny, as you lose things like momentum scrolling 😬

Can be restored by mapping drag to scroll

But that disables scrolling on touch devices 😭

Can be fixed by adding `touch-action: none` 💡

Doesn't actually transition on a touch device (just scrolls) 😅




https://codepen.io/bramus/full/wvOdBJY

💡 That demo doesn't combine drag and scroll

Need to combine drag and scroll on desktop 😕

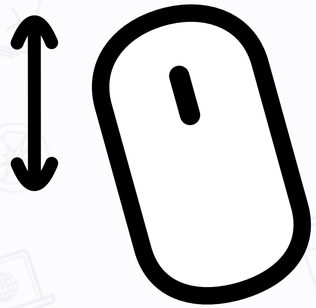
Was this even a good idea to begin with ?! 😭

And why did it work in Jake's demo? 🤔

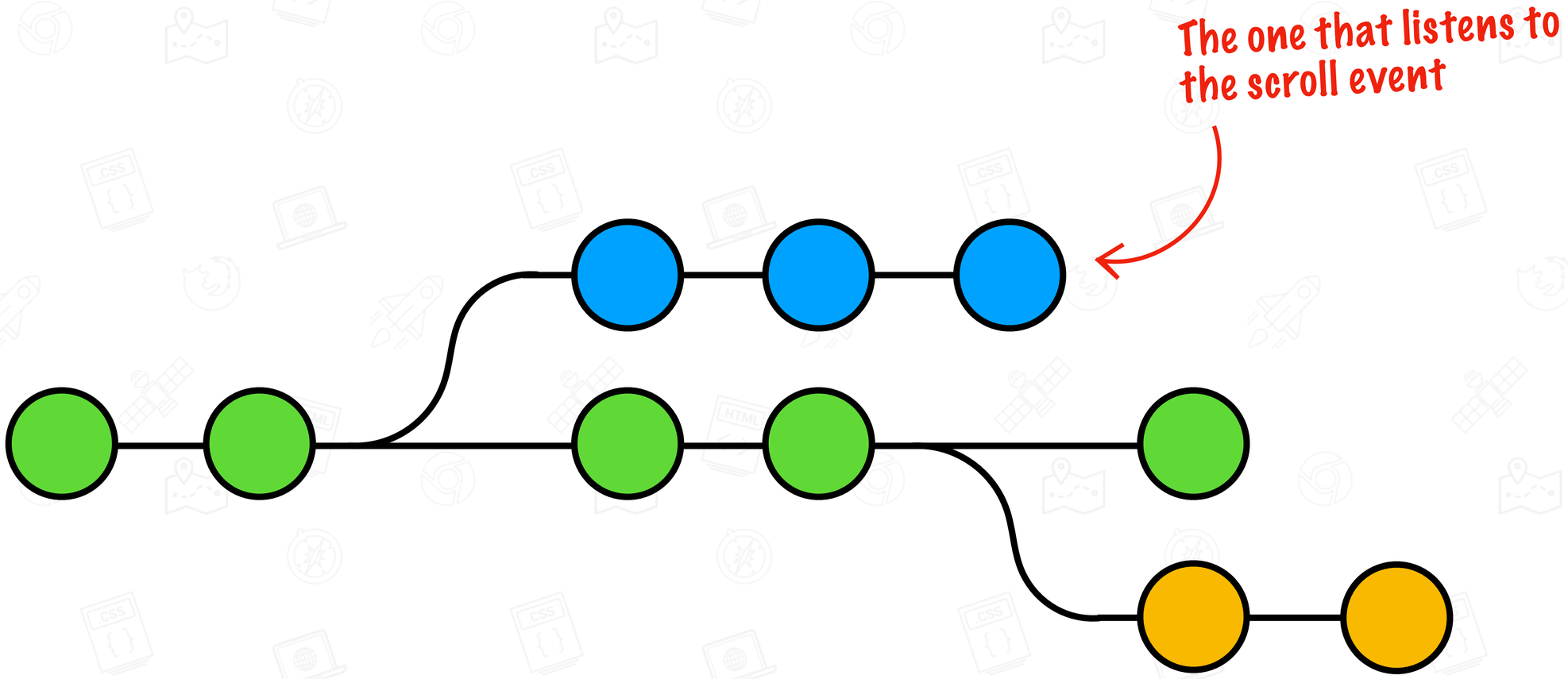
# “How can I make this draggable?”

*Me, being curious*

*“How can I make this scroll-driven?”*



*Me, after realizing I have been asking the wrong question*

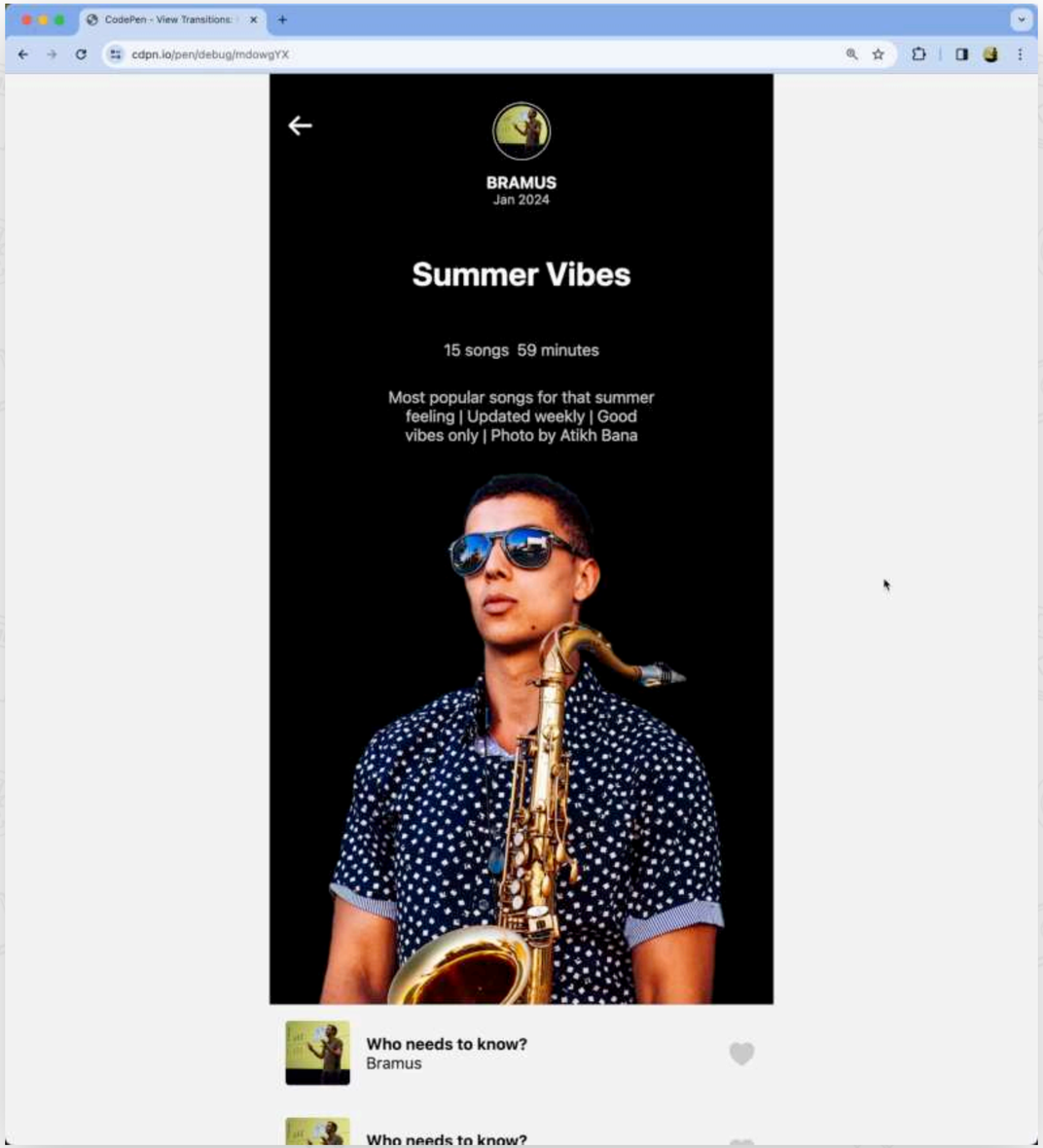

The one that listens to
the scroll event

```
const checkScrollPosition = async () => {
    if (
        (document.documentElement.scrollTop > triggerRange.start) &&
        (document.documentElement.scrollTop < triggerRange.end)
    ) {
        if (!activeViewTransition) {
            startViewTransitionAndPauseTheAnimations();
        } else {
            updateAnimations();
        }
    }
    else {
        if (activeViewTransition) {
            activeViewTransition.skipTransition();
        }
    }
}
window.addEventListener('scroll', checkScrollPosition);
```

```
const startViewTransitionAndPauseTheAnimations = async () => {
    const isReverse = document.querySelector('.small') ? true : false;

    activeViewTransition = document.startViewTransition(() => {
        document.querySelector('.card').classList.toggle('small');
    });

    await activeViewTransition.ready;
    activeAnimations = document.getAnimations().filter((anim) =>
        anim.effect.target === document.documentElement &&
        anim.effect.pseudoElement?.startsWith("::view-transition")
    );

    for (const anim of activeAnimations) {
      if (isReverse) anim.reverse();
      anim.pause();
    }

    // … (cleanup)
};
```

```
const updateAnimations = () => {
    if (!activeAnimations.length) return;

    const scrollProgress = currentScrollDistance / targetScrollDistance;

    const currentTime = clamp(0, scrollProgress * baseDuration, baseDuration);

    for (const animation of activeAnimations) {
        if (animation.playbackRate === -1) {
            animation.currentTime = baseDuration - currentTime;
        } else {
            animation.currentTime = currentTime;
        }
    }
}
```

```
const startViewTransitionAndPauseTheAnimations = async () => {
    // … (start VT + pause animations)

    await activeViewTransition.finished;
    if (document.documentElement.scrollTop > triggerRange.start) {
        document.querySelector('.card').classList.add('small');
    } else {
        document.querySelector('.card').classList.remove('small');
    }

    activeViewTransition = null;

};
```



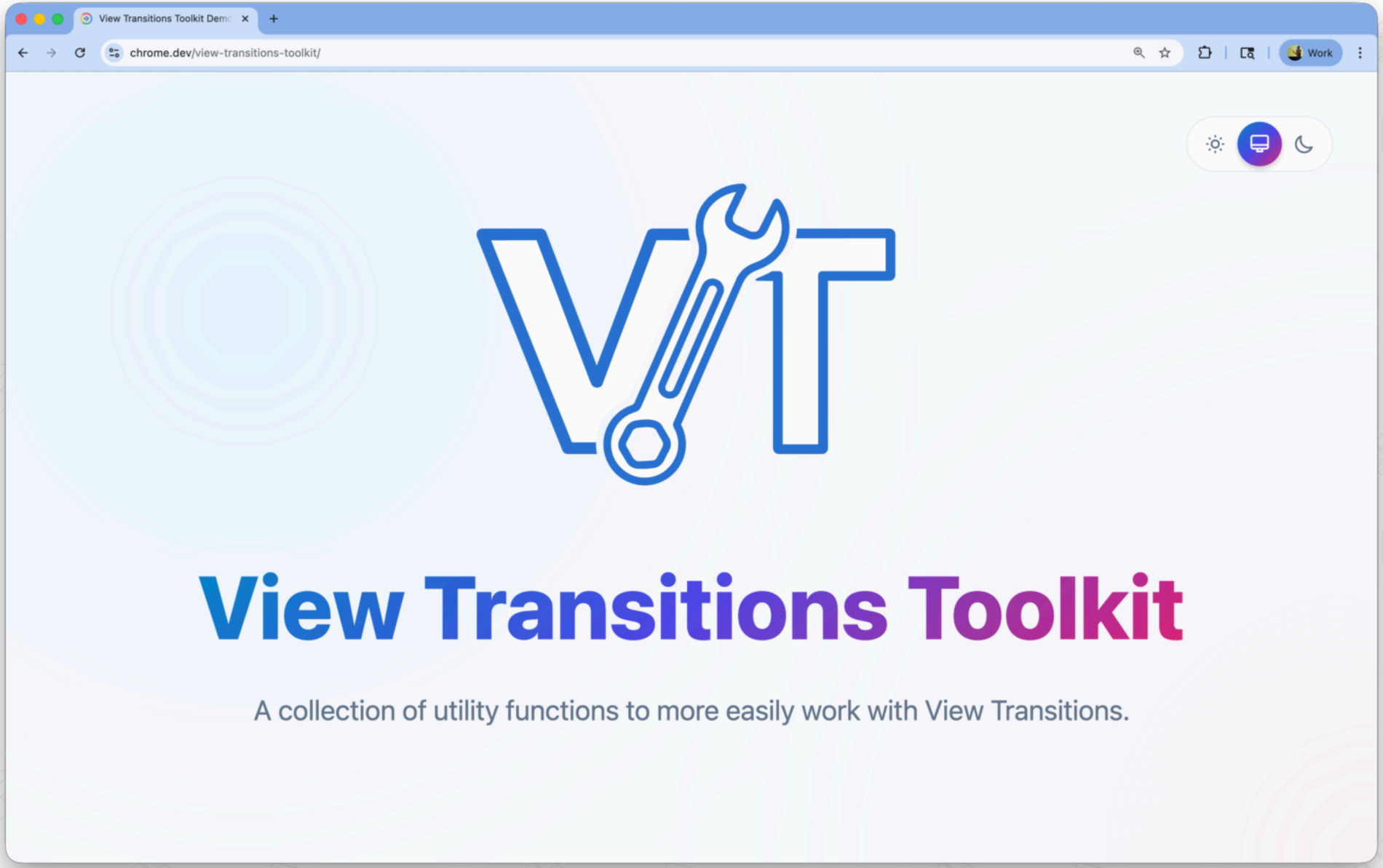

https://codepen.io/bramus/full/mdowgYX

```
const activeViewTransition = document.startViewTransition(…);
await activeViewTransition.ready;

activeAnimations = document.getAnimations().filter((anim) =>
    anim.effect.target === document.documentElement &&
    anim.effect.pseudoElement?.startsWith("::view-transition")
);
```

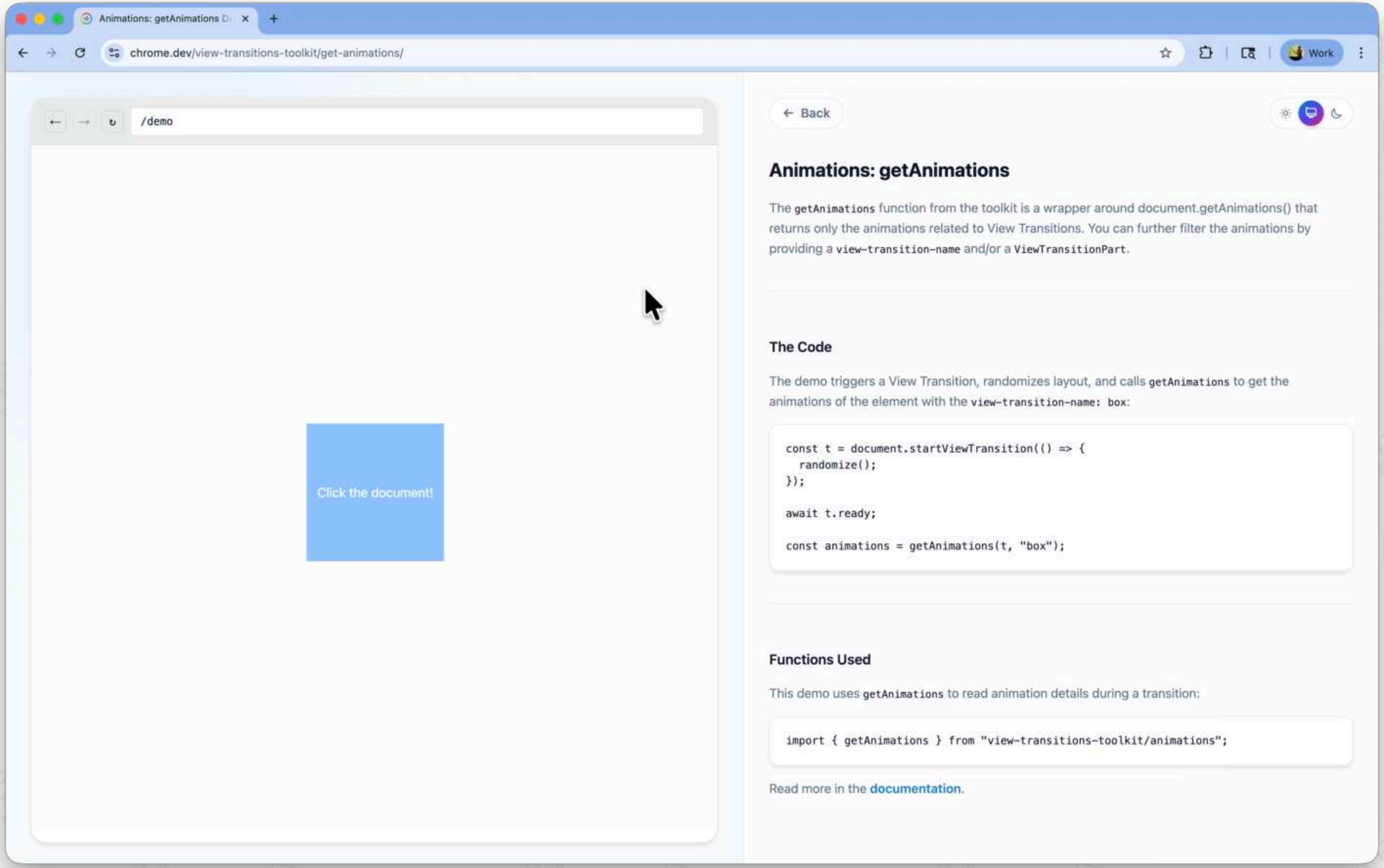
https://brm.us/view-transition-getanimations

```
import { getAnimations } from "view-transitions-toolkit/animations";

const activeViewTransition = document.startViewTransition(…);
await activeViewTransition.ready;

activeAnimations = getAnimations(activeViewTransition);
```

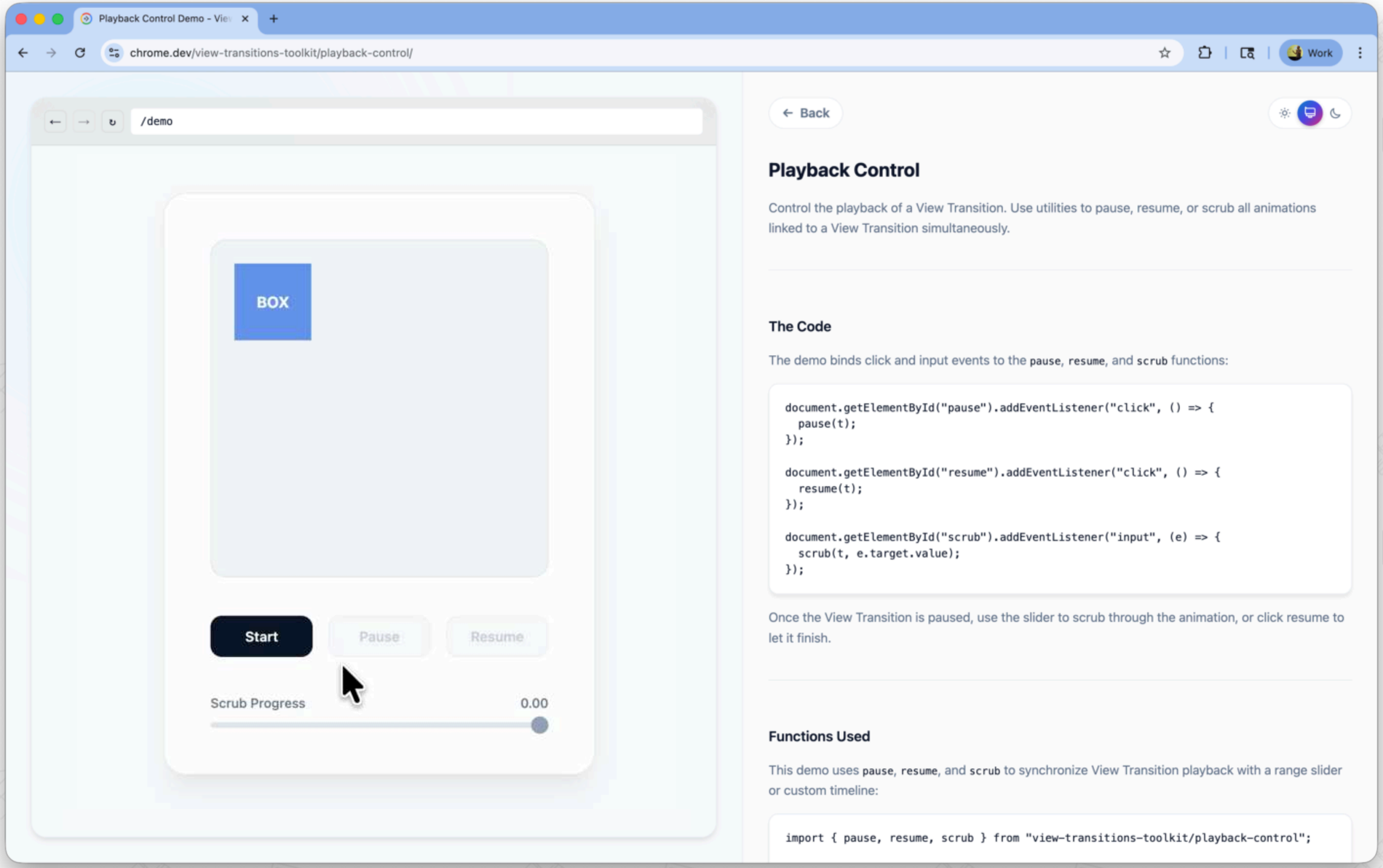
https://npmjs.com/package/view-transitions-toolkit



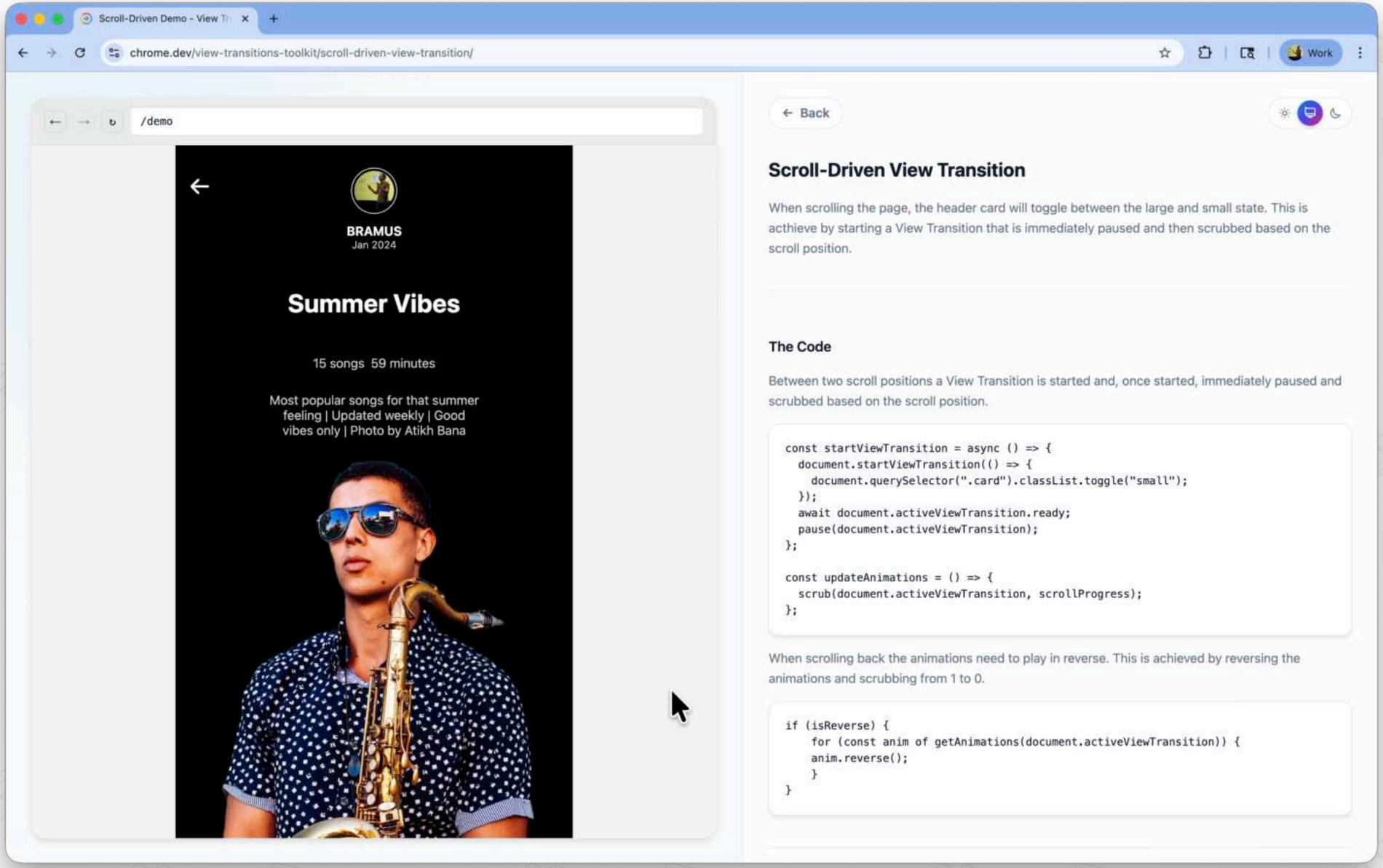

https://chrome.dev/view-transitions-toolkit




https://chrome.dev/view-transitions-toolkit




https://chrome.dev/view-transitions-toolkit




https://chrome.dev/view-transitions-toolkit

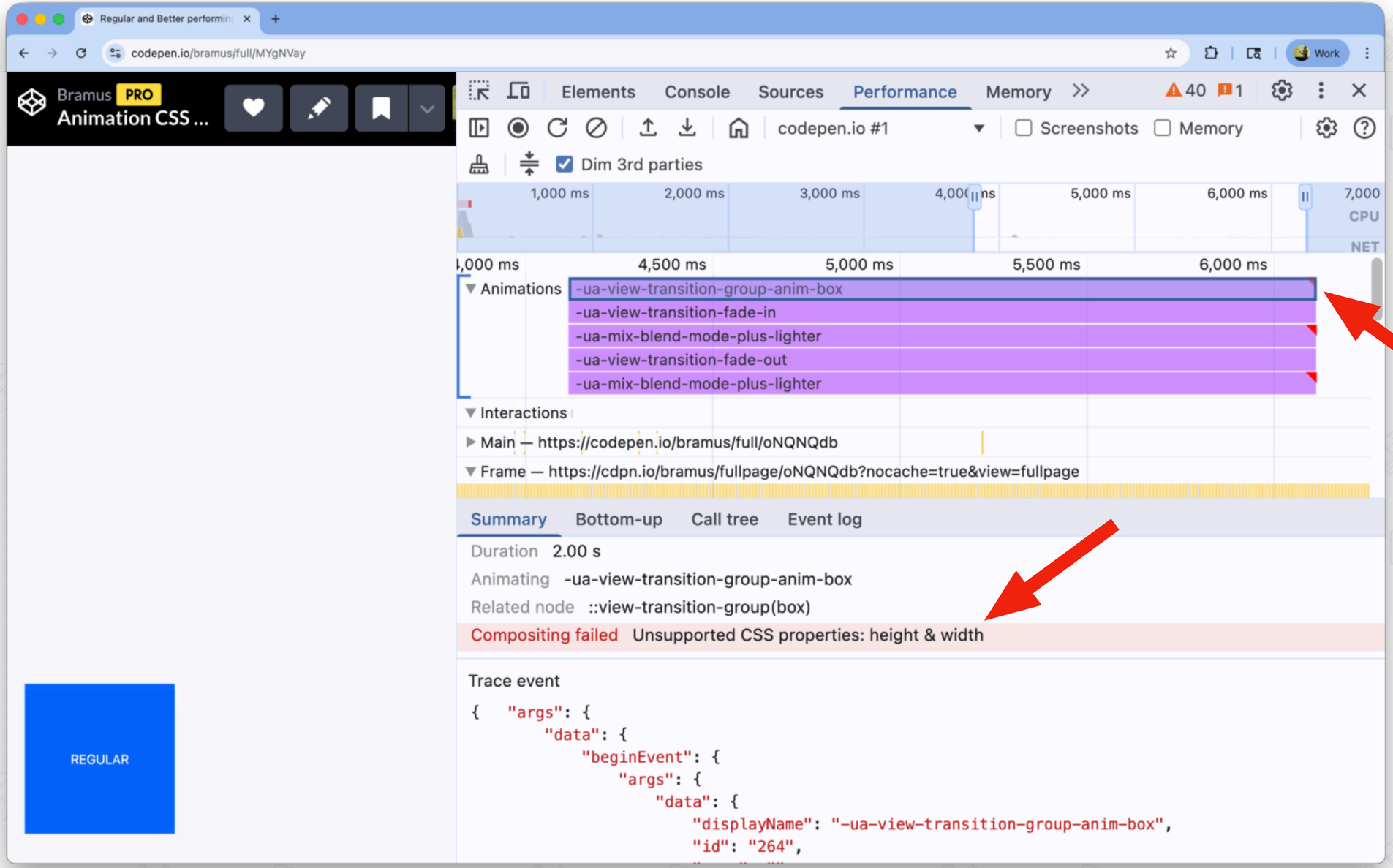
```
import { pause, scrub }
  from "view-transitions-toolkit/playback-control";

const startViewTransition = async () => {
  document.startViewTransition(() => {
    document.querySelector(".card").classList.toggle("small");
  });
  await document.activeViewTransition.ready;
  pause(document.activeViewTransition);
};

const updateAnimations = () => {
  const scrollProgress = /* … */;
  scrub(document.activeViewTransition, scrollProgress);
};
```


MORE
THIS WAY

Critique #1


# *“The keyframes are not performant enough!”*

*Your colleague with DevTools*




https://codepen.io/bramus/full/oNQNQdb

```
[
  {
    "offset": 0,
    "easing": "ease",
    "composite": "auto",
    "height": "100px",
    "width": "100px",
    "backdropFilter": "none",
    "transform": "matrix(1, 0, 0, 1, 0, 0)",
  },
  {
    "offset": 1,
    "easing": "ease",
    "composite": "replace",
    "height": "100px",
    "width": "100px",
    "backdropFilter": "none",
    "transform": "matrix(1, 0, 0, 1, 0, 0)",
  }
]
```

```
const keyframes = boxGroupAnimation.effect.getKeyframes();

delete keyframes[0].width;
delete keyframes[1].width;
delete keyframes[0].height;
delete keyframes[1].height;

boxGroupAnimation.effect.setKeyframes(keyframes);
```

🐛 Returns incorrect keyframes in Chrome <137

crbug/387030974

⚠️ Only allowed when the width and height remain the same

*Quick Fix*

✔ Extract all data from the original keyframes

# “Let’s roll our own FLIP”

✔ Also works in work in Chrome < 137 (with some hacks)

*Me, going down the rabbit hole*

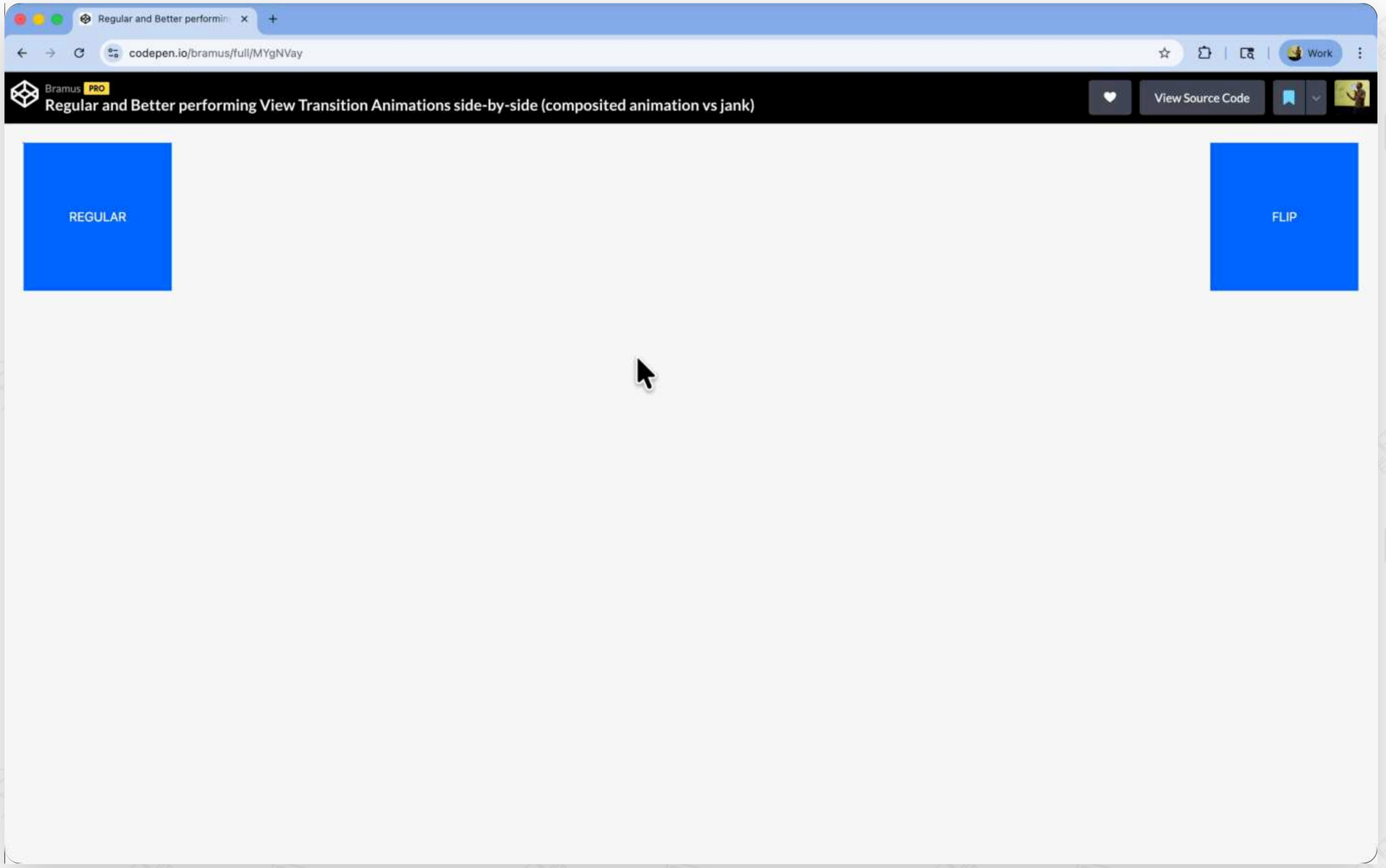
```
import { getAnimations, ViewTransitionPart }
  from "view-transitions-toolkit/animations";

// Trigger VT
const t = document.startViewTransition(moveTheBox);
await t.ready;

// Get the group's animation
const boxGroupAnimation = getAnimations(
  t, "box", ViewTransitionPart.Group
)[0];

// Get the keyframes
const boxGroupKeyframes = boxGroupAnimation.effect.getKeyframes();
```

```
// Build rect to represent the old position + size
// based off of the “from” transform value
const oldMatrix = new DOMMatrix(boxGroupKeyframes[0].transform);
const rectBefore = {
  width: boxGroupKeyframes[0].width.split('px')[0],
  height: boxGroupKeyframes[0].height.split('px')[0],
  left: oldMatrix.e,
  top: oldMatrix.f,
};
```

```
// Build rect to represent the new position + size
// based off of the “to” transform value
// ⚠️ Needs workaround for Chrome < 137
const newMatrix = new DOMMatrix(boxGroupKeyframes[1].transform);
const rectAfter = {
  width: boxGroupKeyframes[1].width.split('px')[0],
  height: boxGroupKeyframes[1].height.split('px')[0],
  left: newMatrix.e,
  top: newMatrix.f,
};
```

```
const transform = [
  `translate(${rectBefore.left}px,${rectBefore.top}px)
   scaleX(${rectBefore.width / rectAfter.width})
   scaleY(${rectBefore.height / rectAfter.height})`,

  `translate(${rectAfter.left}px,${rectAfter.top}px)
   scaleX(1)
   scaleY(1)`,
];

const flipKeyframes = {
  transform,
  transformOrigin: ['0% 0%', '0% 0%'],
  easing: "ease",
};
```

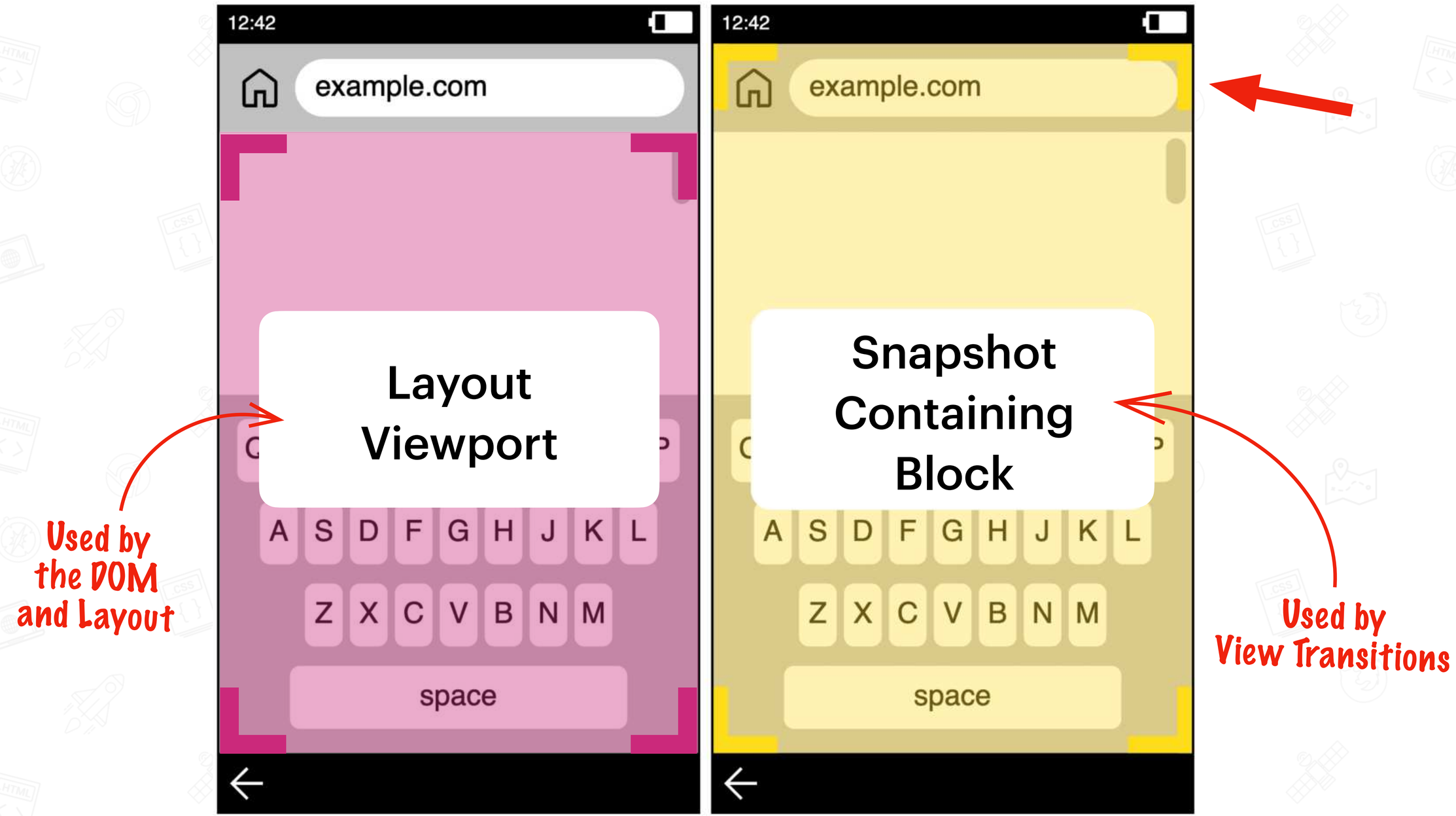
```
if (isBuggyChromium(boxGroupKeyframes)) {
    boxGroupAnimation.currentTime =
      boxGroupAnimation.effect.getTiming().duration;

    const newStyles = window.getComputedStyle(
      document.documentElement, '::view-transition-group(box)');
    const newMatrix = new DOMMatrix(newStyles.transform);

    rectAfter = {
        width: newStyles.width.split('px')[0],
        height: newStyles.height.split('px')[0],
        left: newMatrix.e,
        top: newMatrix.f,
    };

    boxGroupAnimation.currentTime = 0;
}
```

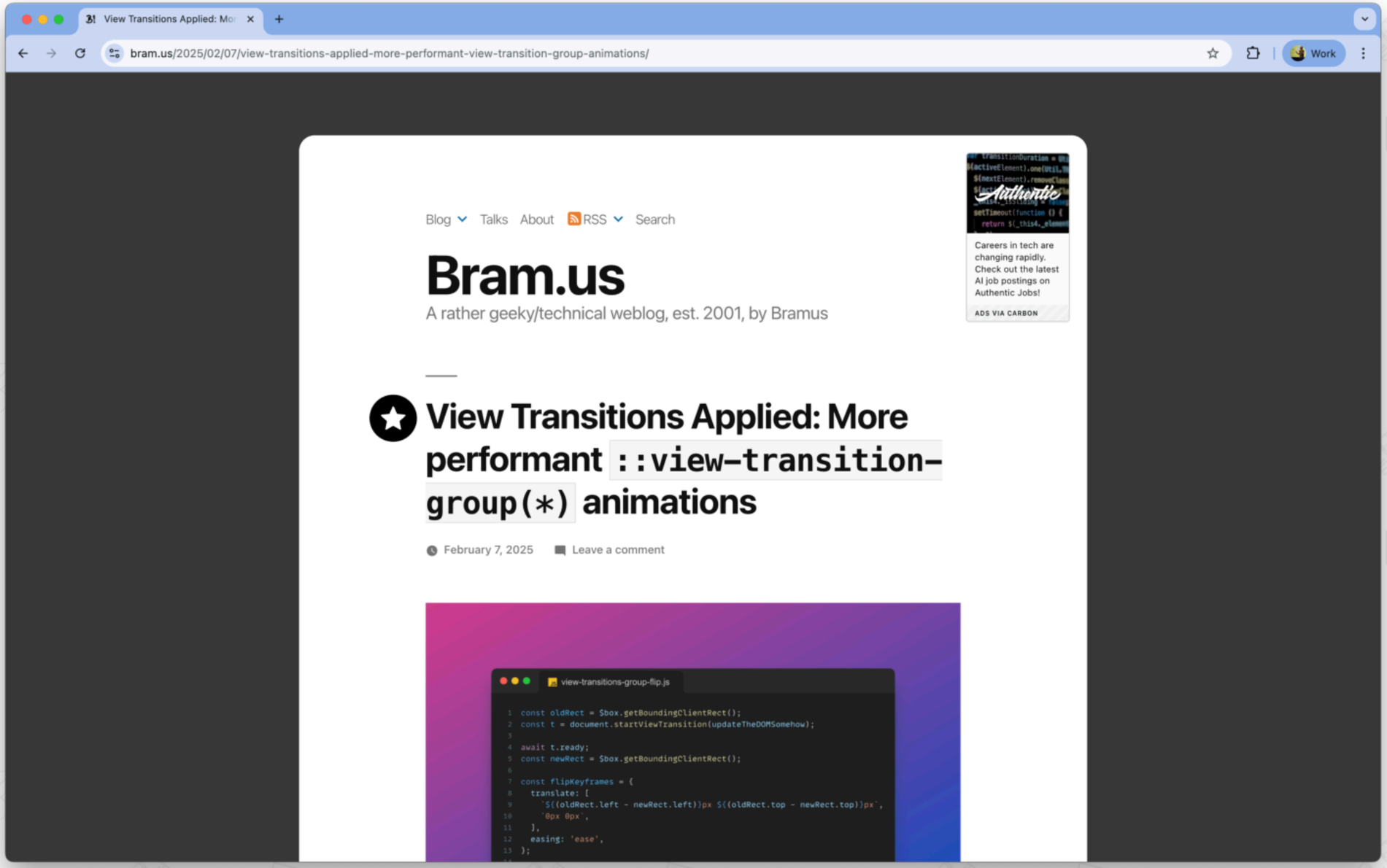



https://codepen.io/bramus/full/MYgNVay

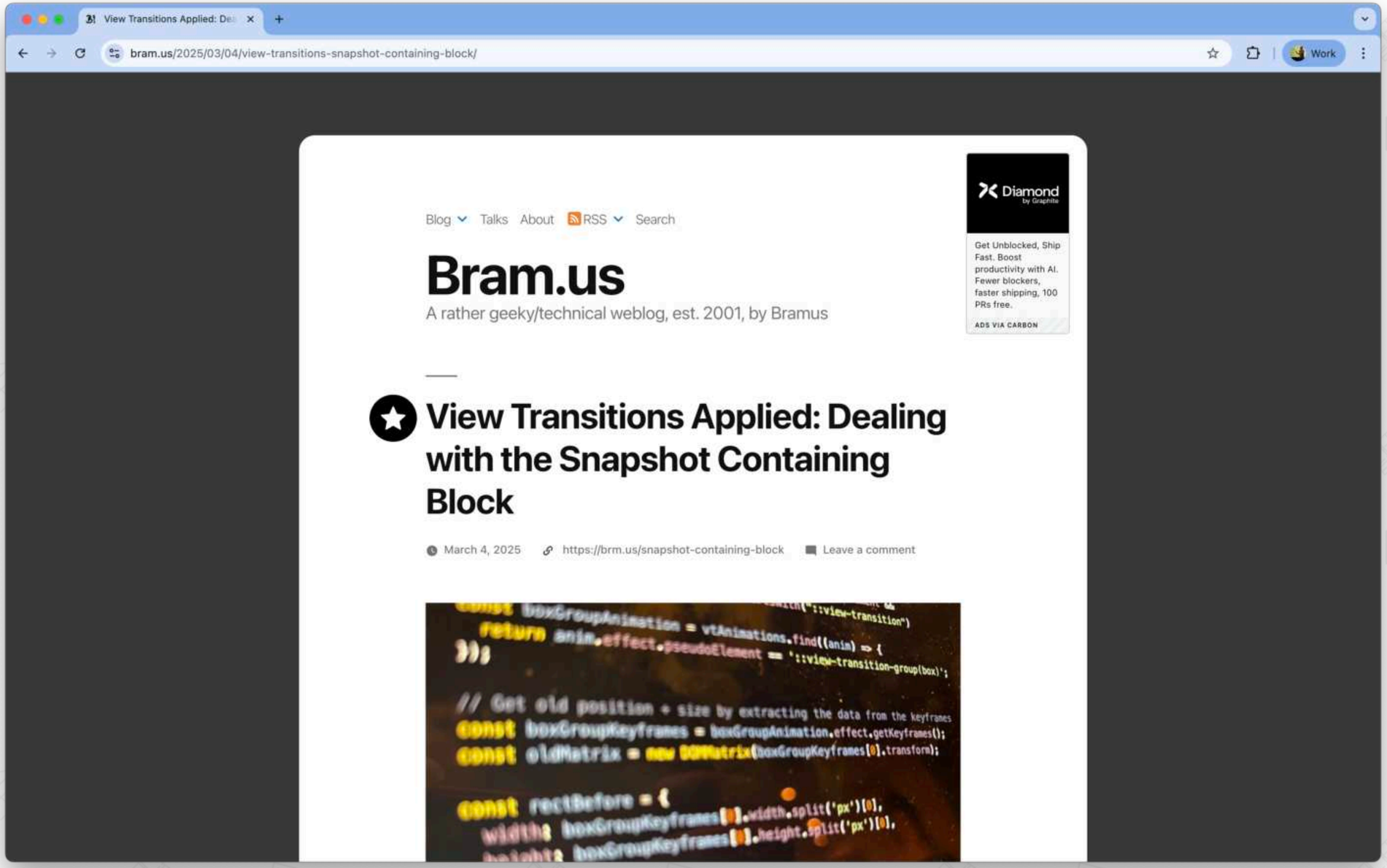
# “Why not just do a getBoundingClientRect?”

*You, maybe*

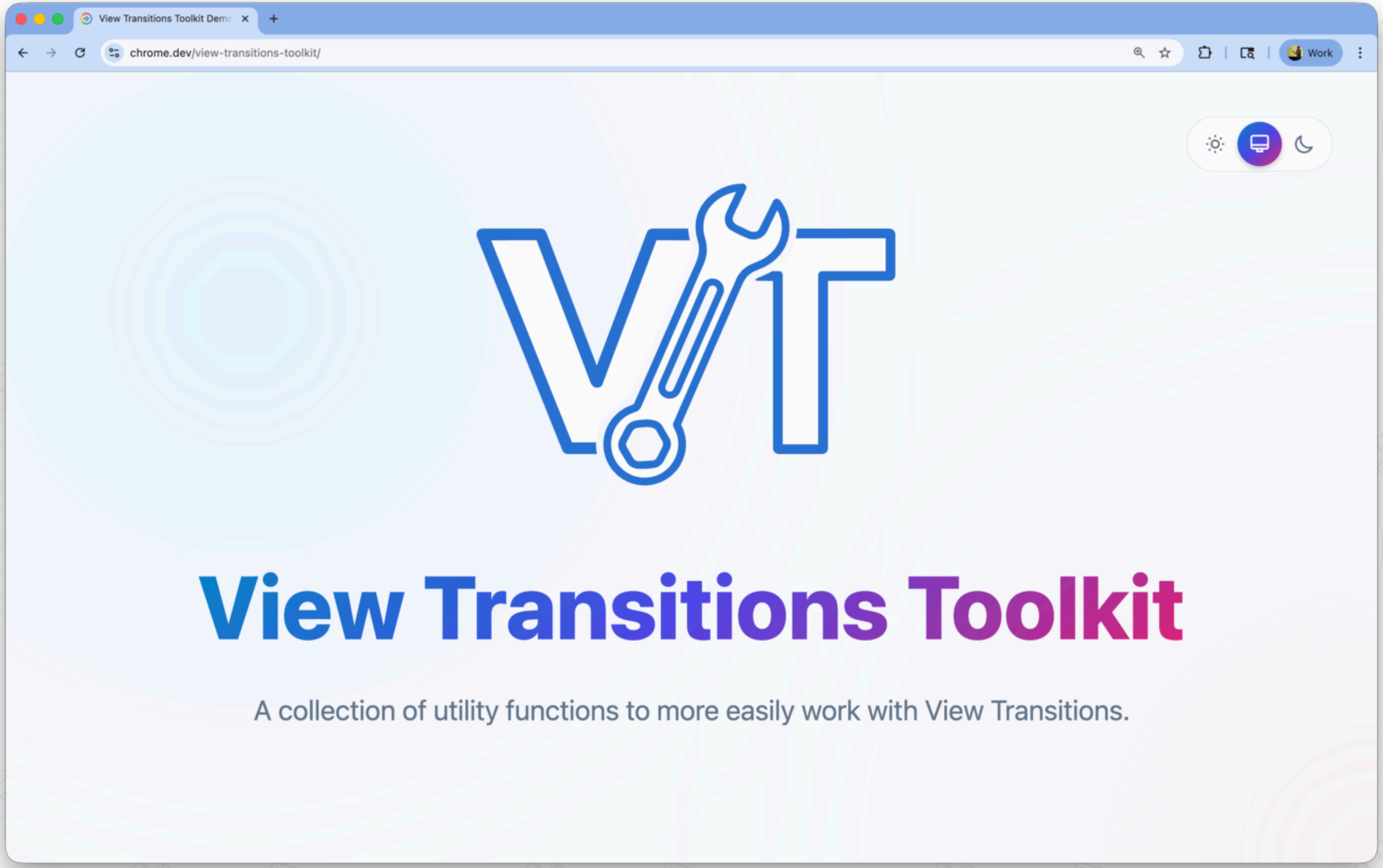

12:42
example.com
Layout Viewport
A S D F G H J K L
Z X C V B N M
space
12:42
example.com
Snapshot Containing Block
A S D F G H J K L
Z X C V B N M
space
Used by the DOM and Layout
Used by View Transitions




https://brm.us/view-transitions-keyframes



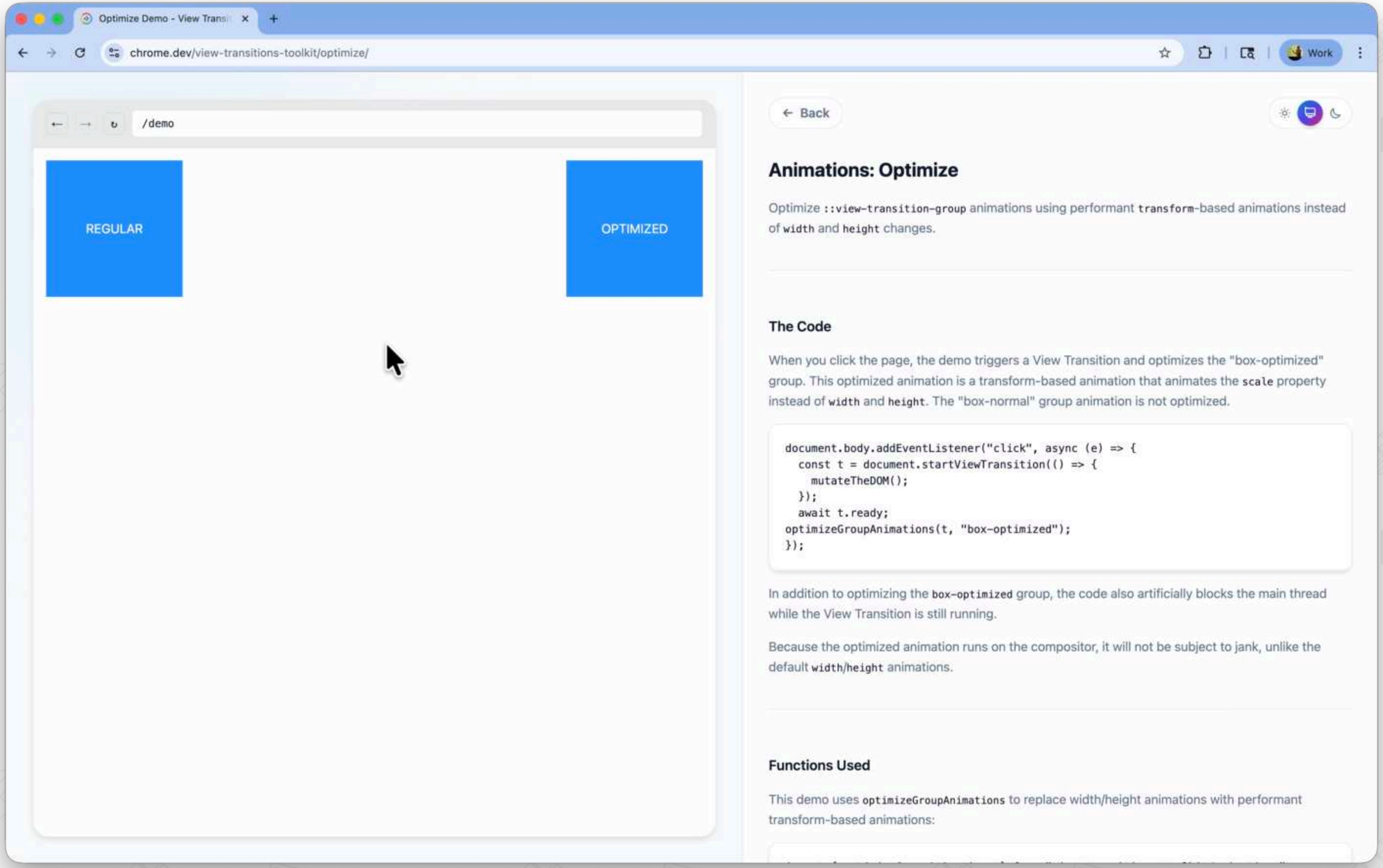

https://brm.us/snapshot-containing-block




https://chrome.dev/view-transitions-toolkit

```
import {
  optimizeGroupAnimations
} from "view-transitions-toolkit/animations";

const t = document.startViewTransition(() => { … });
await t.ready;

optimizeGroupAnimations(t, "box");
```

https://chrome.dev/view-transitions-toolkit/




https://chrome.dev/view-transitions-toolkit/

Critique #2

✔ Re-enable pointer-events

# *“The document is not interactive while a VT runs”*

✔ Use Element-Scoped View Transitions

*You, clicking around*

```
document.startViewTransition(…);
```

*View Transition*


147


X


X

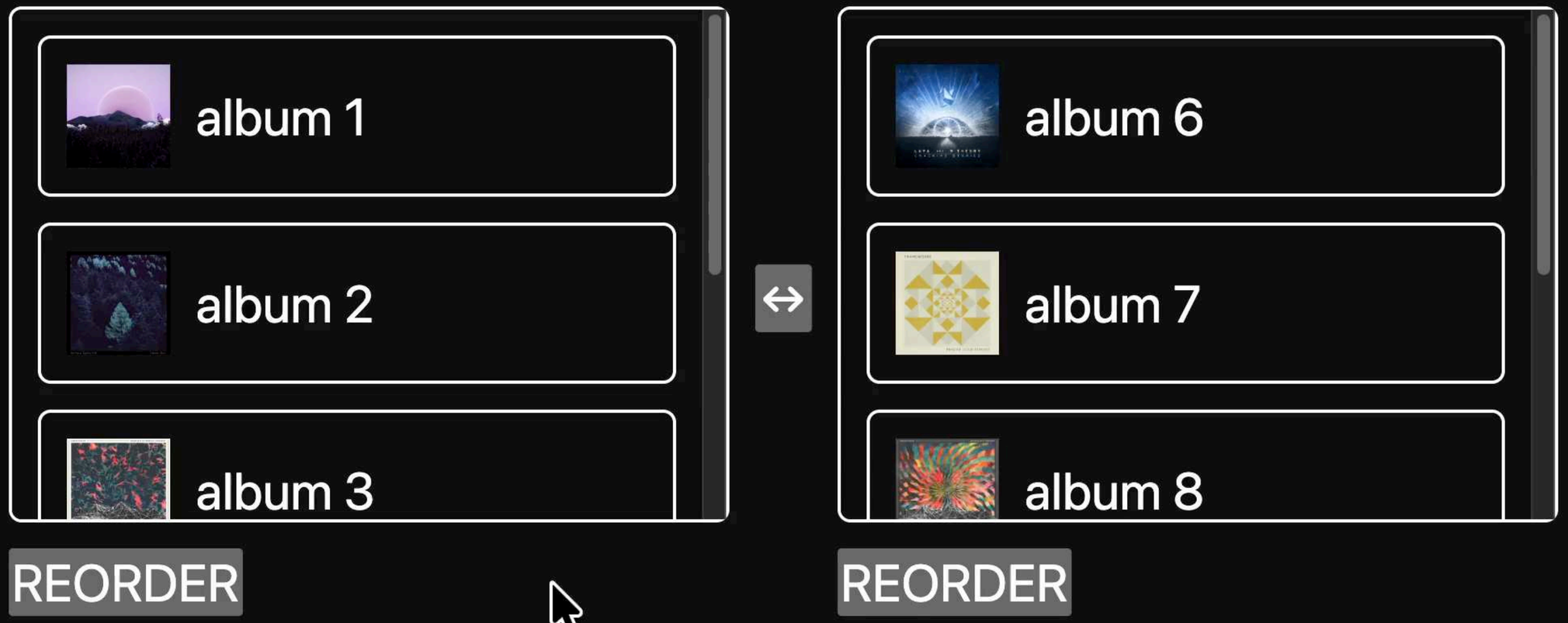
```
$list .startViewTransition(…);
```

*Element-Scoped View Transition*


```
#list ::view-transition
      ├─ ::view-transition-group(list)
      │  └─ ::view-transition-image-pair(list)
      │     ├─ ::view-transition-old(list)
      │     └─ ::view-transition-new(list)
      └─ ::view-transition-group-children(list)
         ├─ ::view-transition-group(item-1)
         │  └─ ::view-transition-image-pair(item-1)
         │     ├─ ::view-transition-old(item-1)
         │     └─ ::view-transition-new(item-1)
         ├─ ::view-transition-group(item-2)
         │  └─ …
        …
```

*Element-Scoped View Transition Pseudo Tree*

Concurrent and Nested View Transitions! 🤩

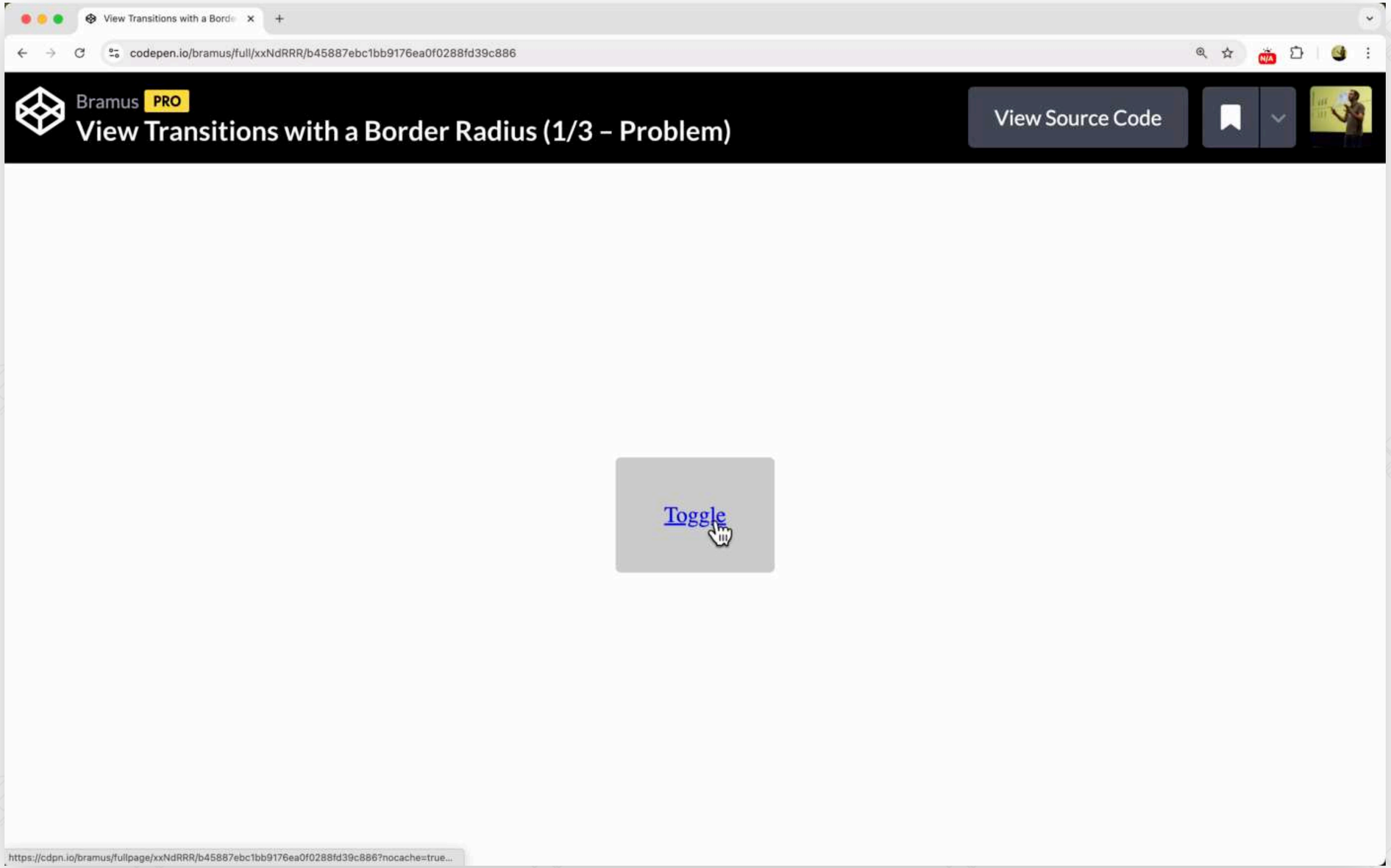




https://codepen.io/bramus/full/bNeydYM

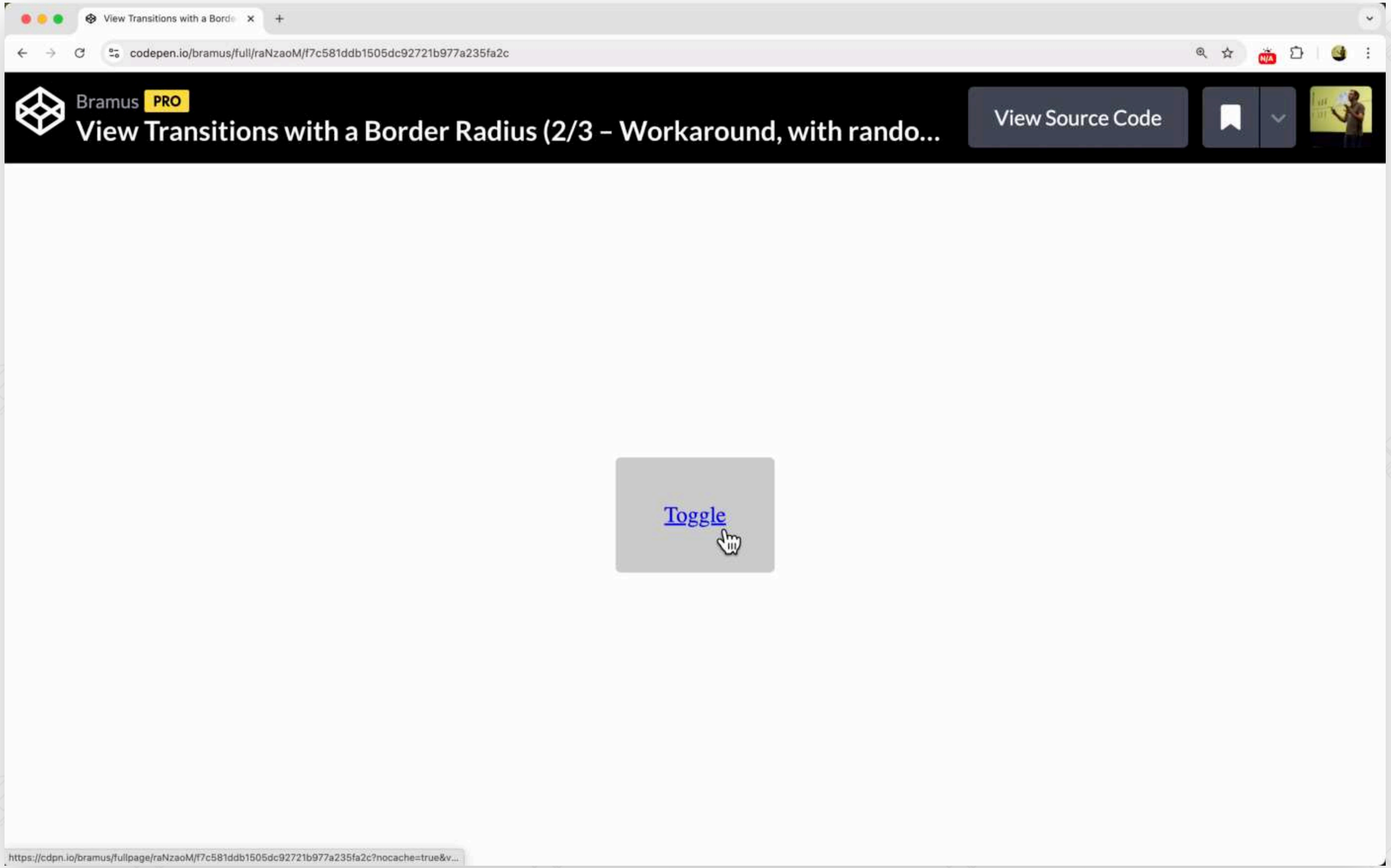
Critique #3

# “Ugh, you are animating pixels instead of elements”

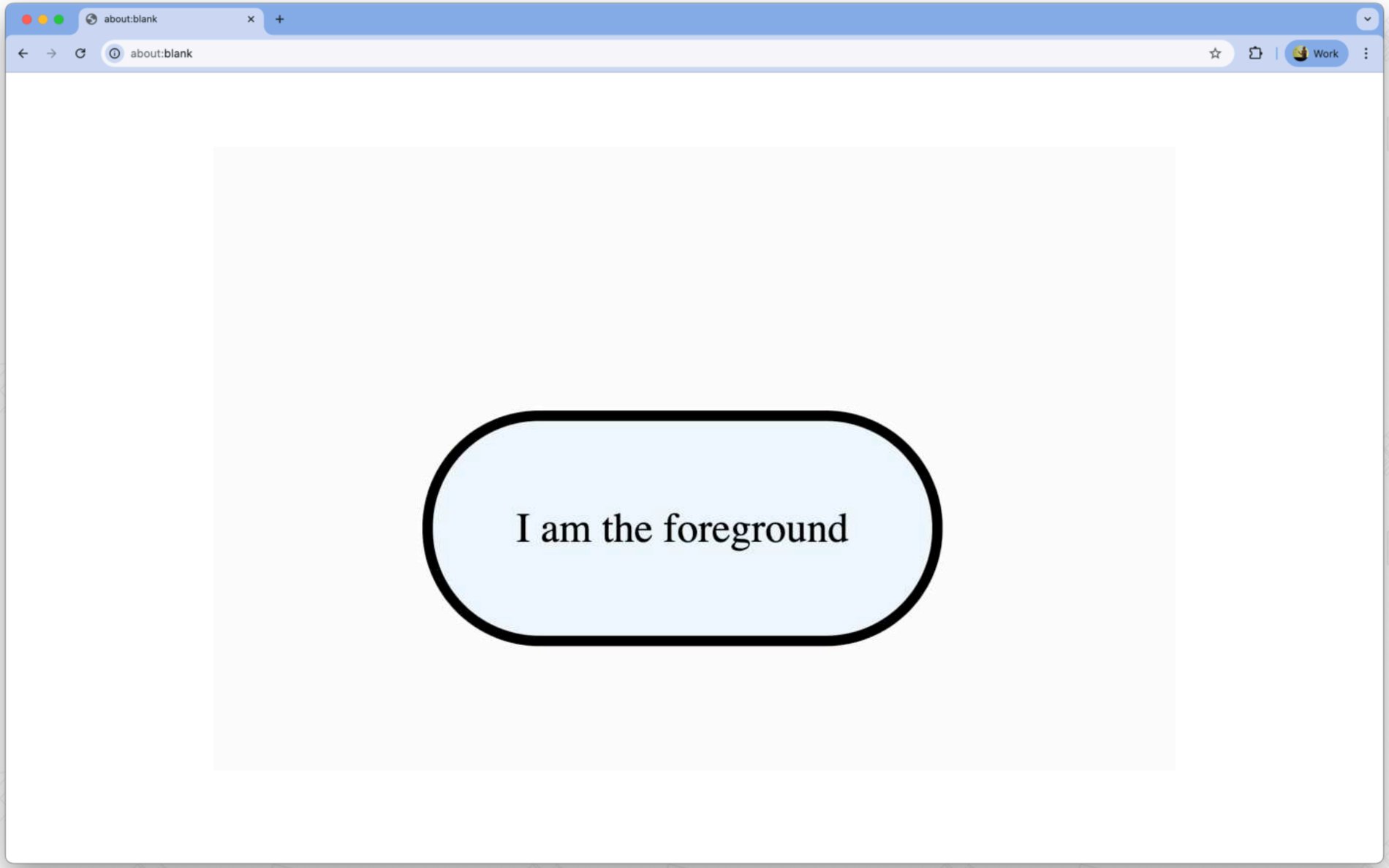

*Your border-radius loving colleague*




https://codepen.io/bramus/full/xxNdRRR/b45887ebc1bb9176ea0f0288fd39c886




https://codepen.io/bramus/full/raNzaoM/f7c581ddb1505dc92721b977a235fa2c



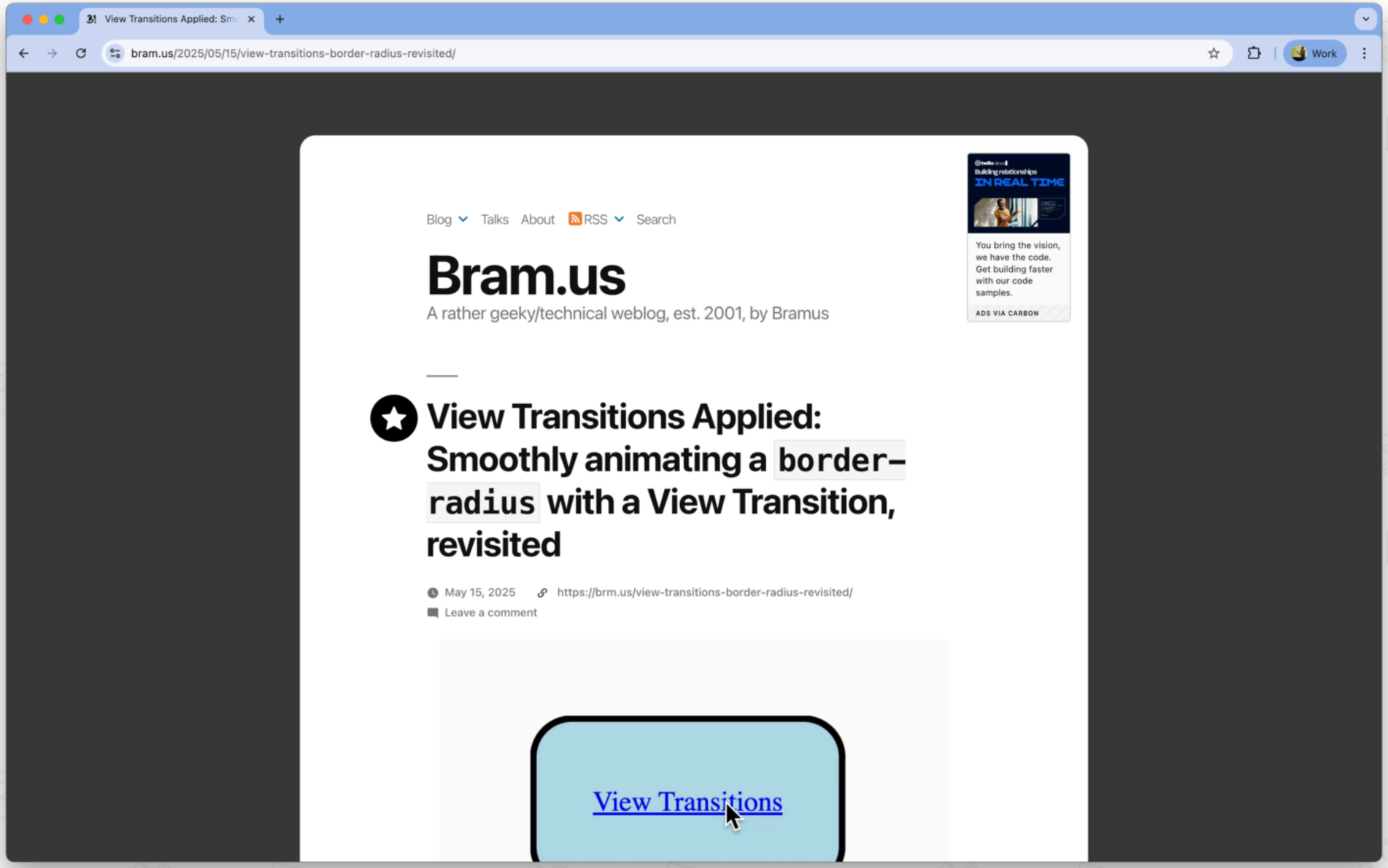

https://codepen.io/bramus/full/XJJGNRN/834e41c3983688a374374b4b5ca0282f

```css
#card {
  font-size: 1em;
  background: grey;
  border-width: 2px;
  border-radius: 0.25rem;
}

#card.big {
  font-size: 2em;
  background: lightblue;
  border-width: 8px;
  border-radius: 3rem;
}
```

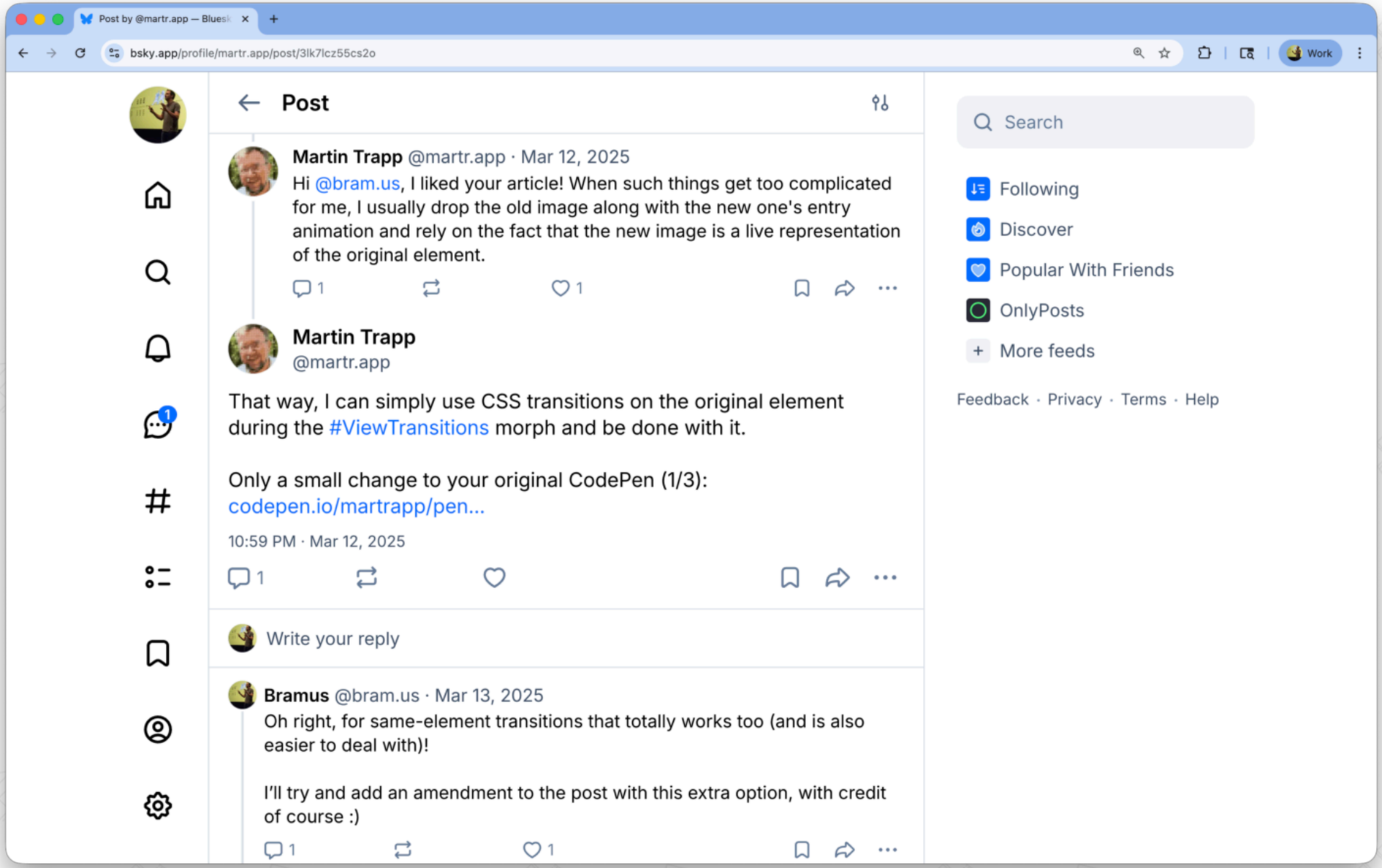
https://brm.us/view-transitions-border-radius-revisited

```
#card {
  view-transition-name: card;
  transition: all 2s ease;
}

::view-transition-old(card) {
  display: none;
}
::view-transition-new(card) {
  animation: none;
  width: 100%;
  height: 100%;
}
```

*https://brm.us/view-transitions-border-radius-revisited*




https://brm.us/view-transitions-border-radius-revisited




https://bsky.app/profile/martr.app/post/3lk7kr63odk2i

SOON

```
import {
  morph
} from "view-transitions-toolkit/animations";

const t = document.startViewTransition(() => { … });
await t.ready;

morph(t, document.querySelector('#card'), [
    "border-radius",
    "border-width",
    "background-color",
    "font-size"
  ], { duration: 2000, easing: 'ease' });
```

https://www.npmjs.com/package/view-transitions-toolkit

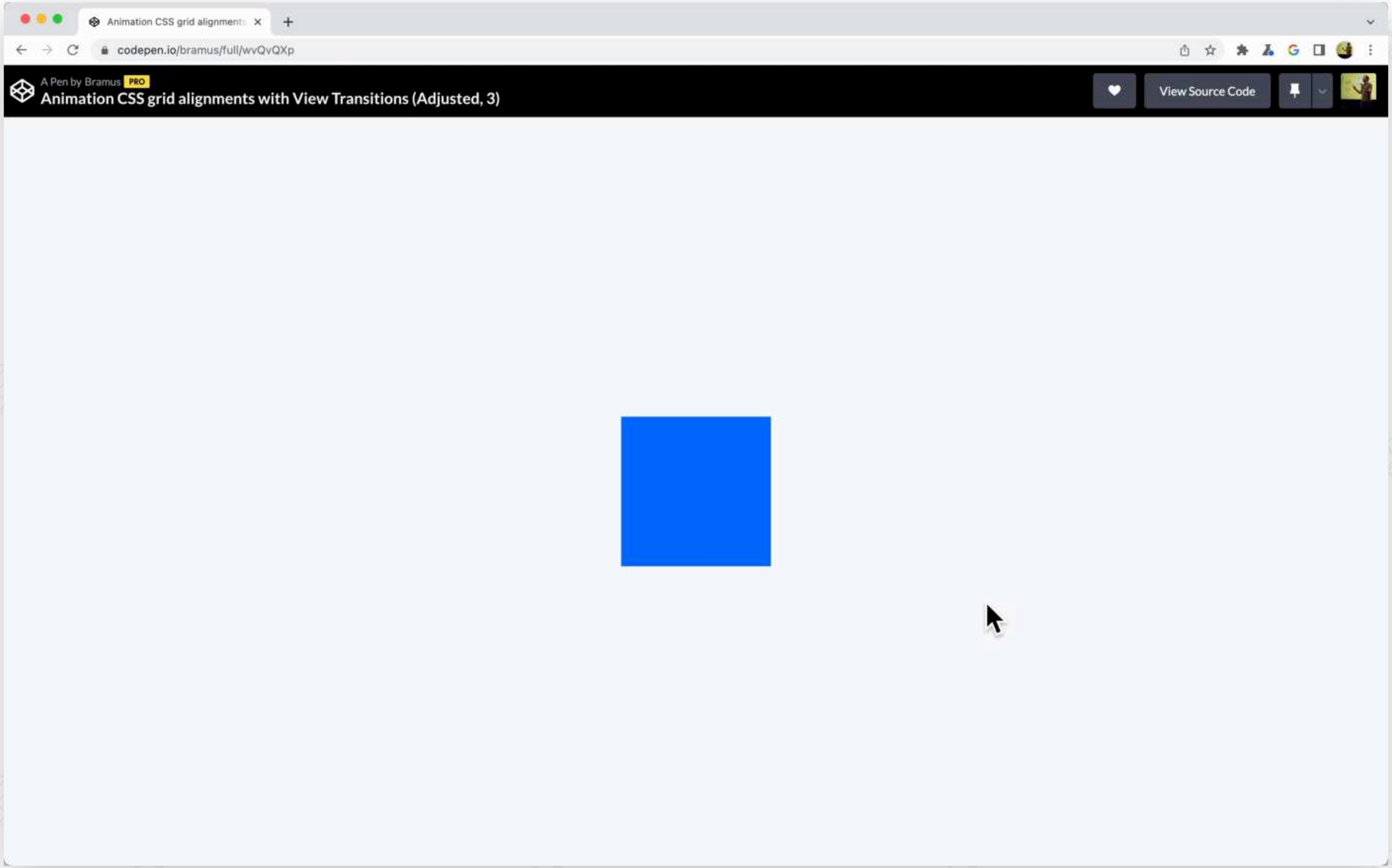
Critique #4

# “Interrupted View Transitions skip to the end”

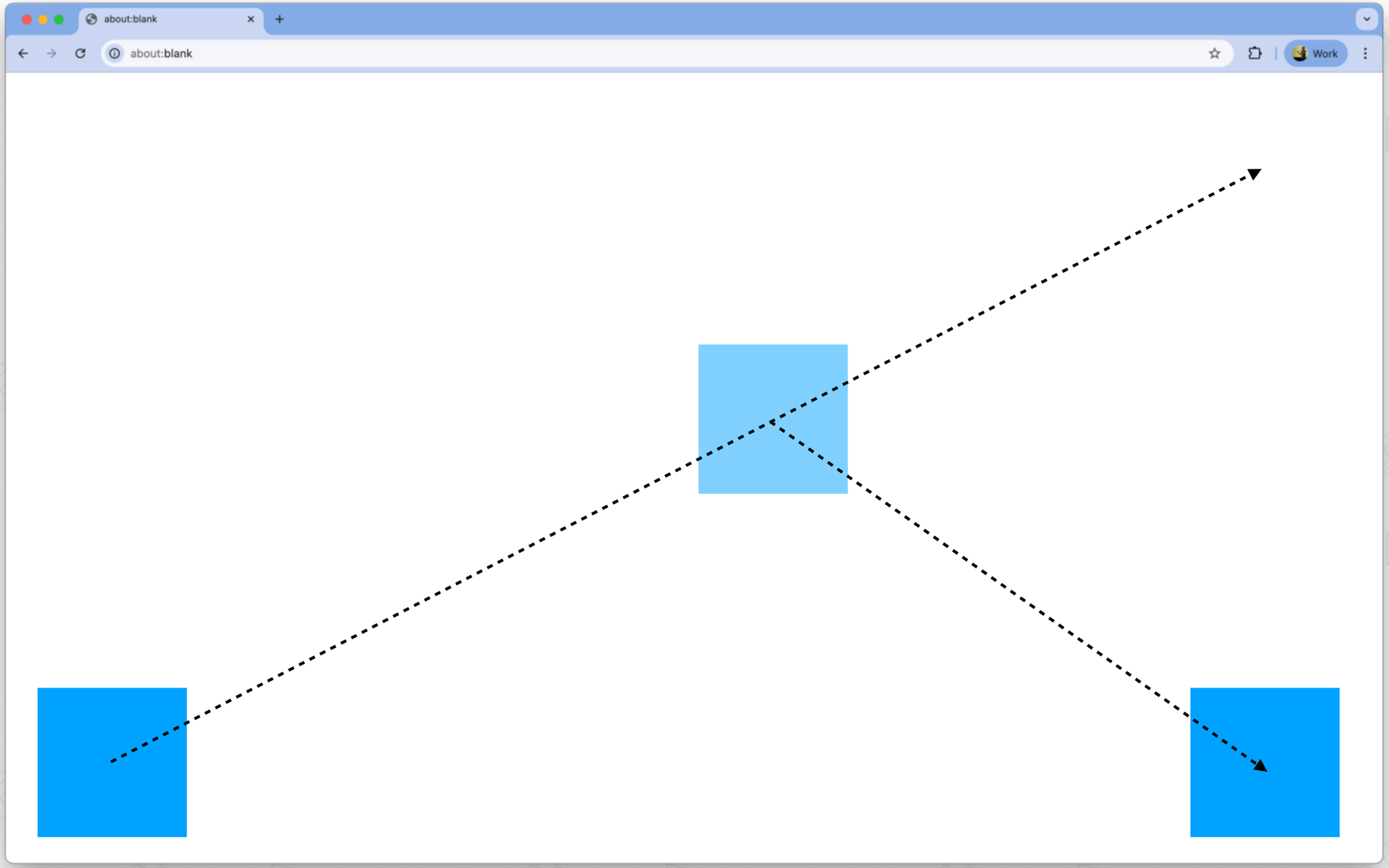
x Hijack the intermediate state and animate along a generated curve or use additive animations

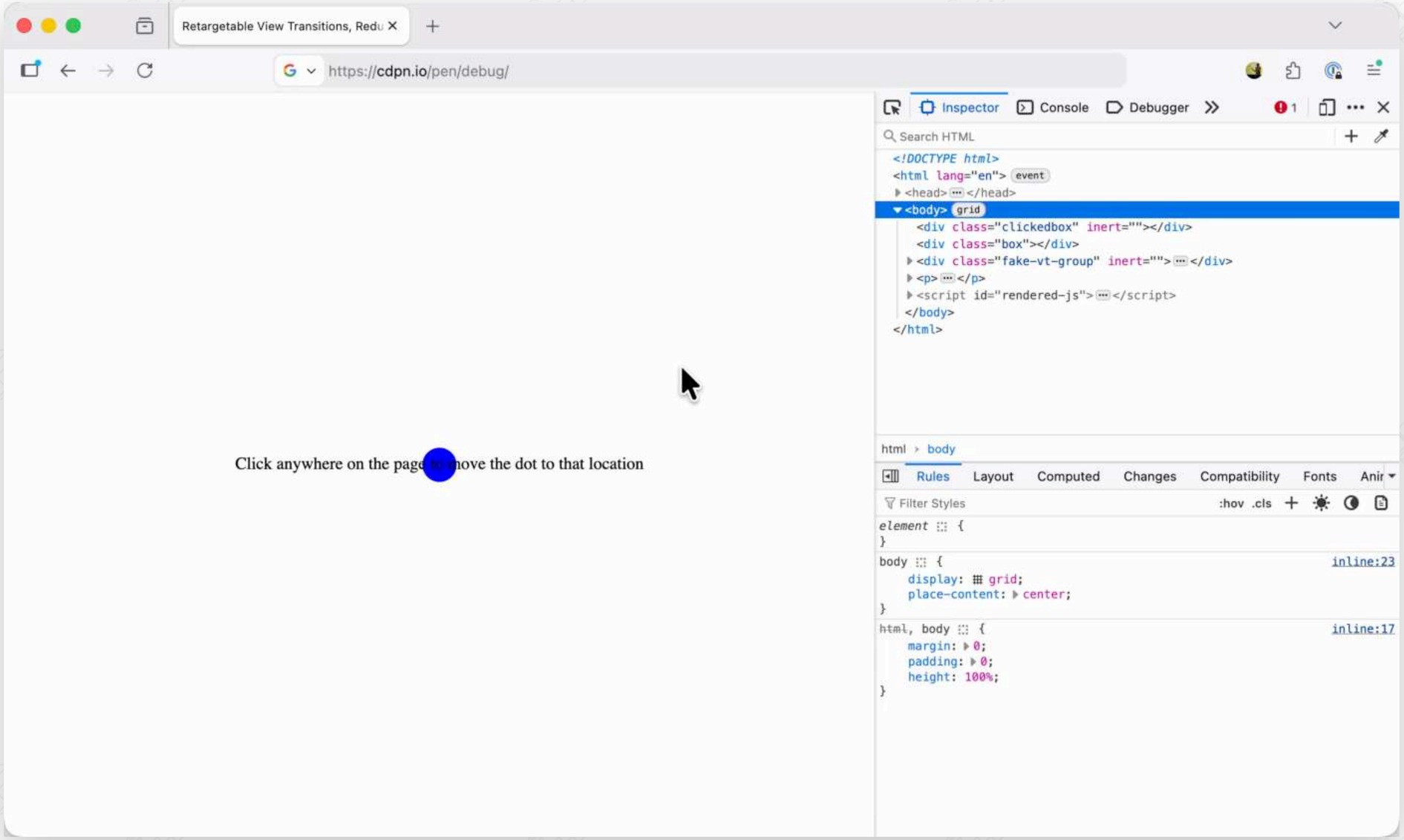
x Only “works” for same-element transitions

*A rage-clicking you*



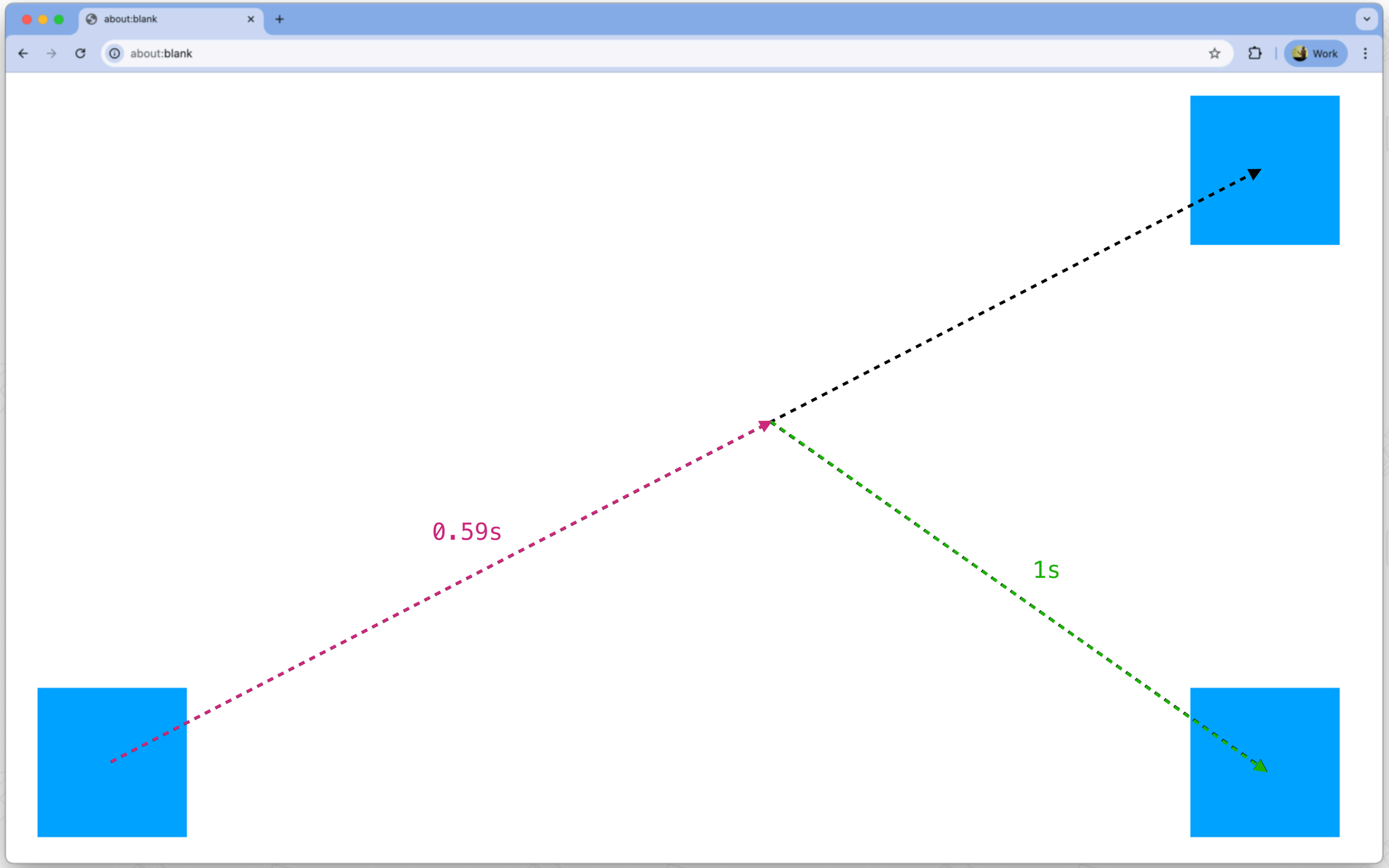

https://codepen.io/bramus/full/wvQvQXp

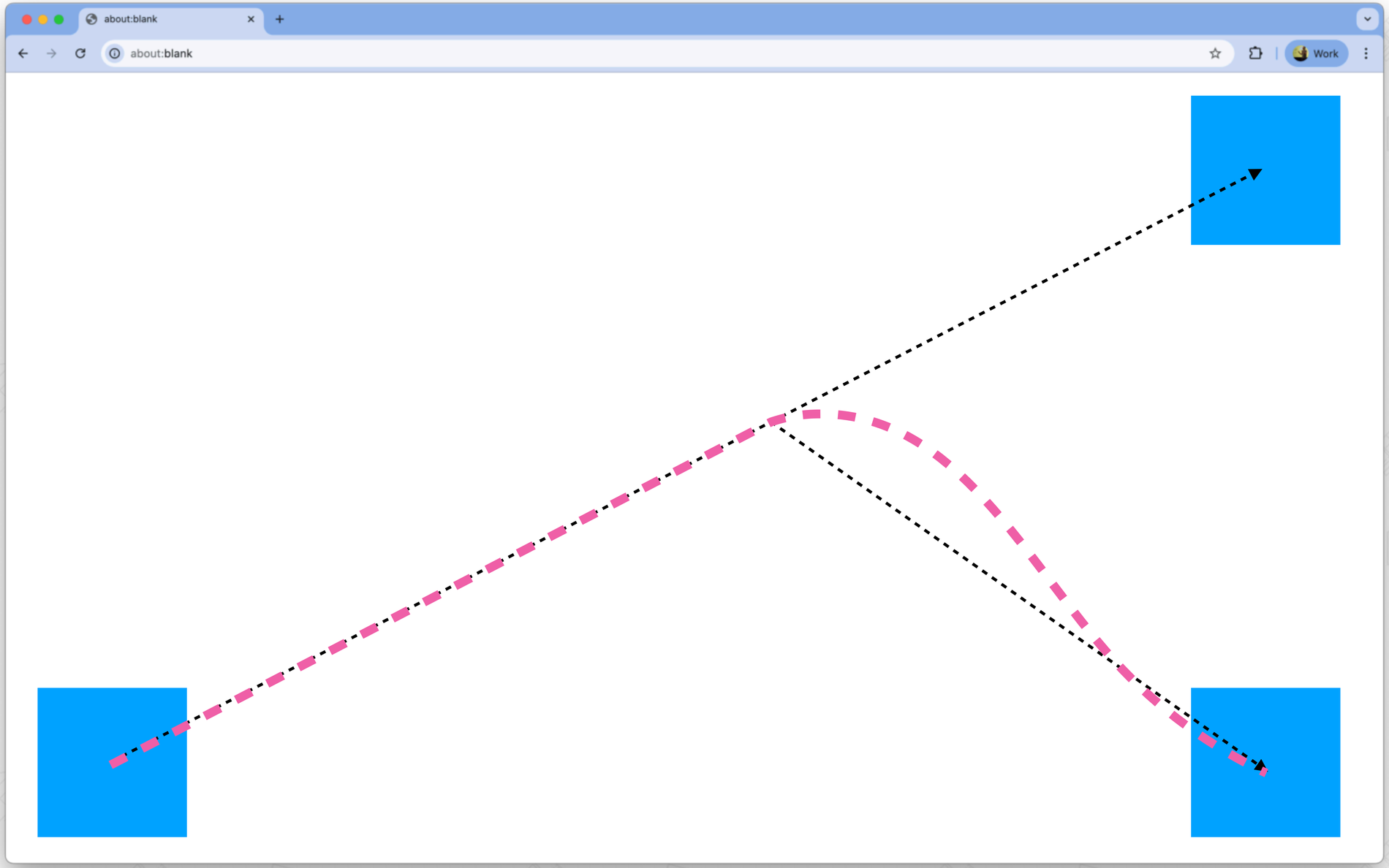

about:blank
about:blank
Work


Retargetable View Transitions, Redu
https://cdpn.io/pen/debug/
Click anywhere on the page to move the dot to that location
Inspector
Console
Debugger
Search HTML
<!DOCTYPE html>
<html lang="en"> event
<head> ··· </head>
<body> grid

 ··· 
 ··· 
<script id="rendered-js"> ··· </script>
</body>
</html>
html › body
Rules
Layout
Computed
Changes
Compatibility
Fonts
Filter Styles
:hov .cls
element { }
body { inline:23
display: grid;
place-content: center;
}
html, body { inline:17
margin: 0;
padding: 0;
height: 100%;
}

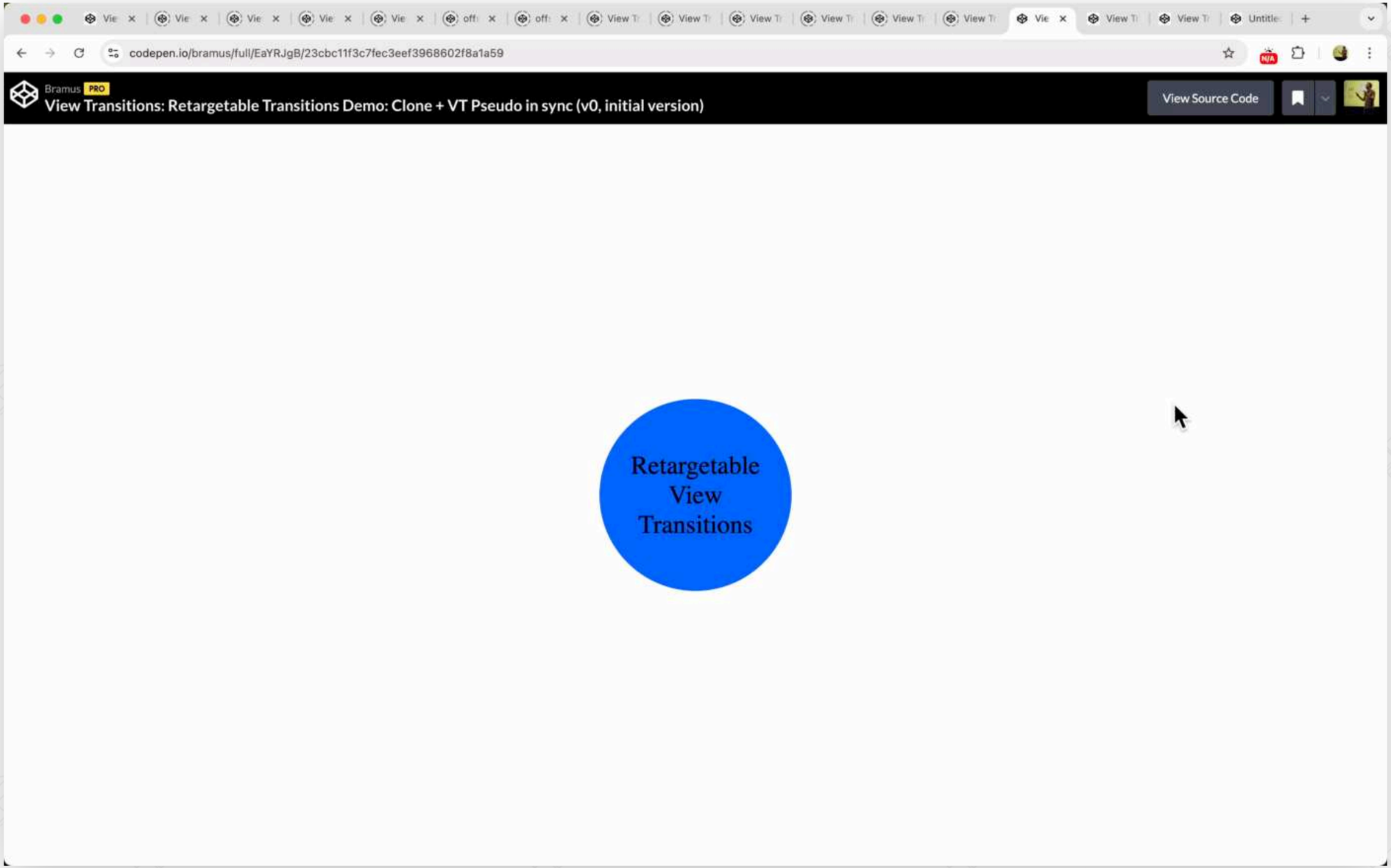
WIP


about:blank
about:blank
Work
0.59s
1s

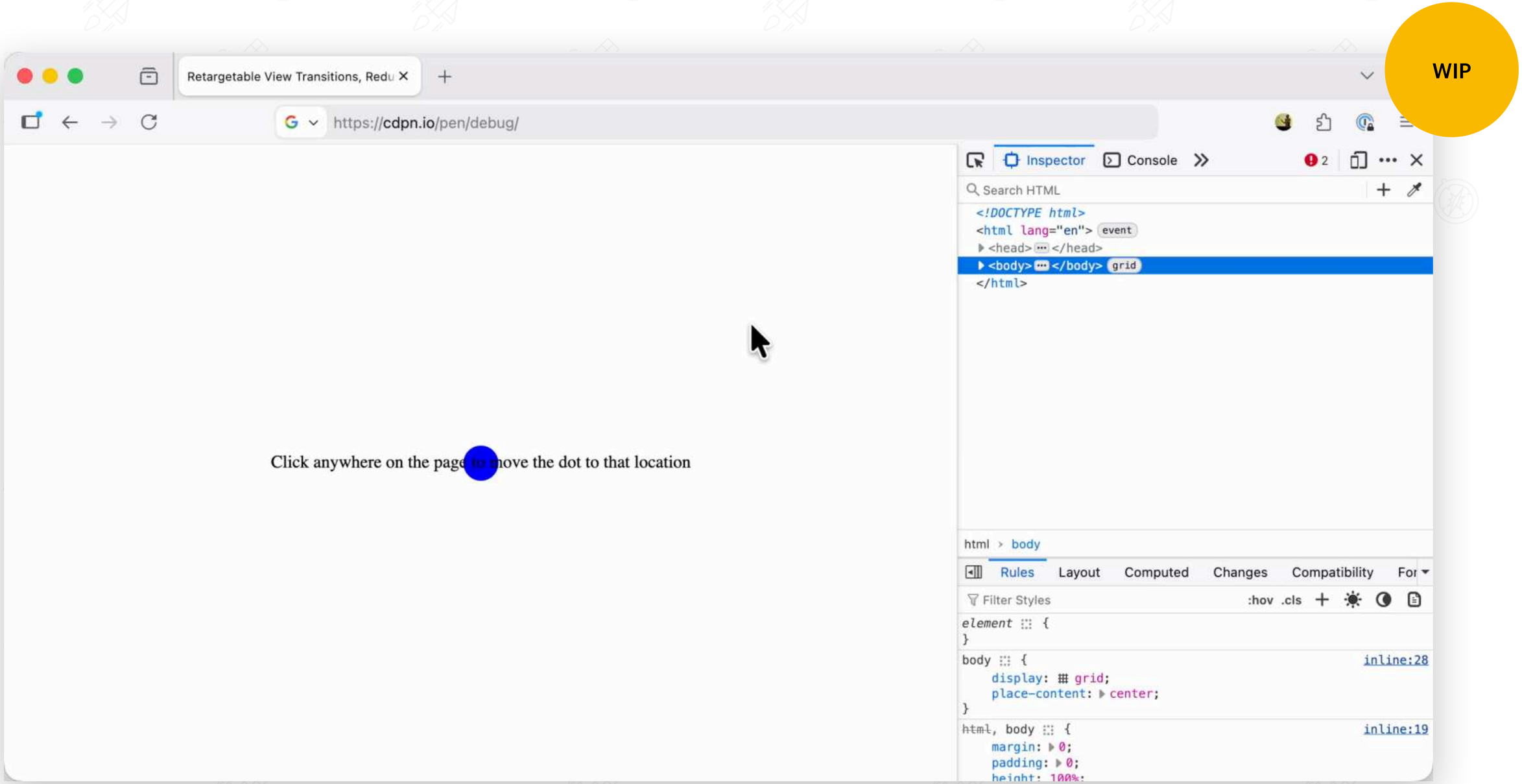

about:blank
about:blank
Work

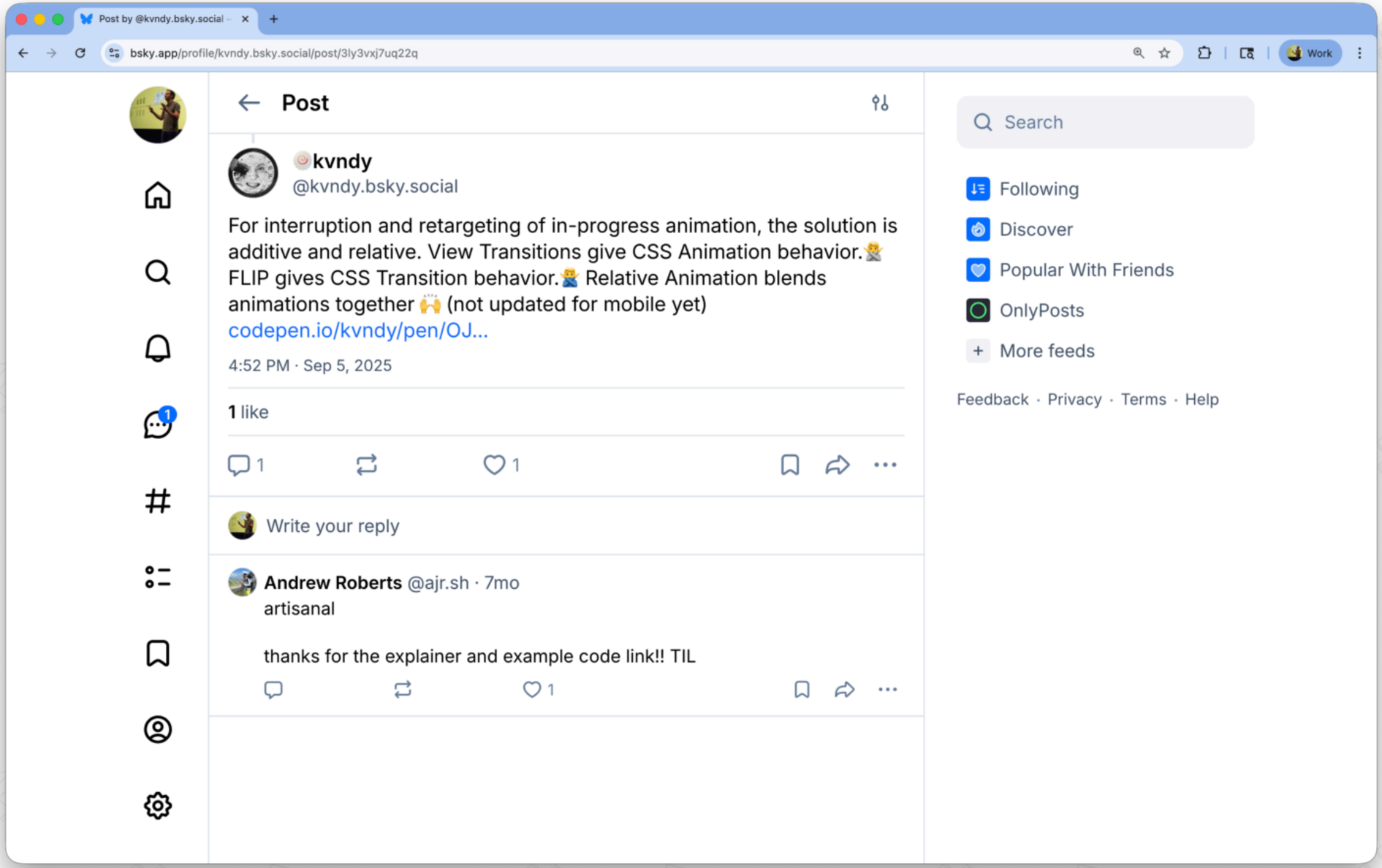
```
const $svg = createLineSVG([...intermediaryPositions, rectAfter]);

const $path = $svg.querySelector('#line_path');
const pathData = $path.getAttribute('d');
pathLength = $path.getTotalLength();

const keyframes = {
    easing: "linear",
    visibility: ['visible', 'visible'],
    offsetPath: [`path("${pathData}")`, `path("${pathData}")`],
    offsetRotate: ['0deg', '0deg'],
    offsetAnchor: ['50%', '50%'],
    offsetDistance: ['0%', '100%'],
};
```

https://codepen.io/bramus/full/YPKjyVM/8879924fa74779c696b4fe415d391751

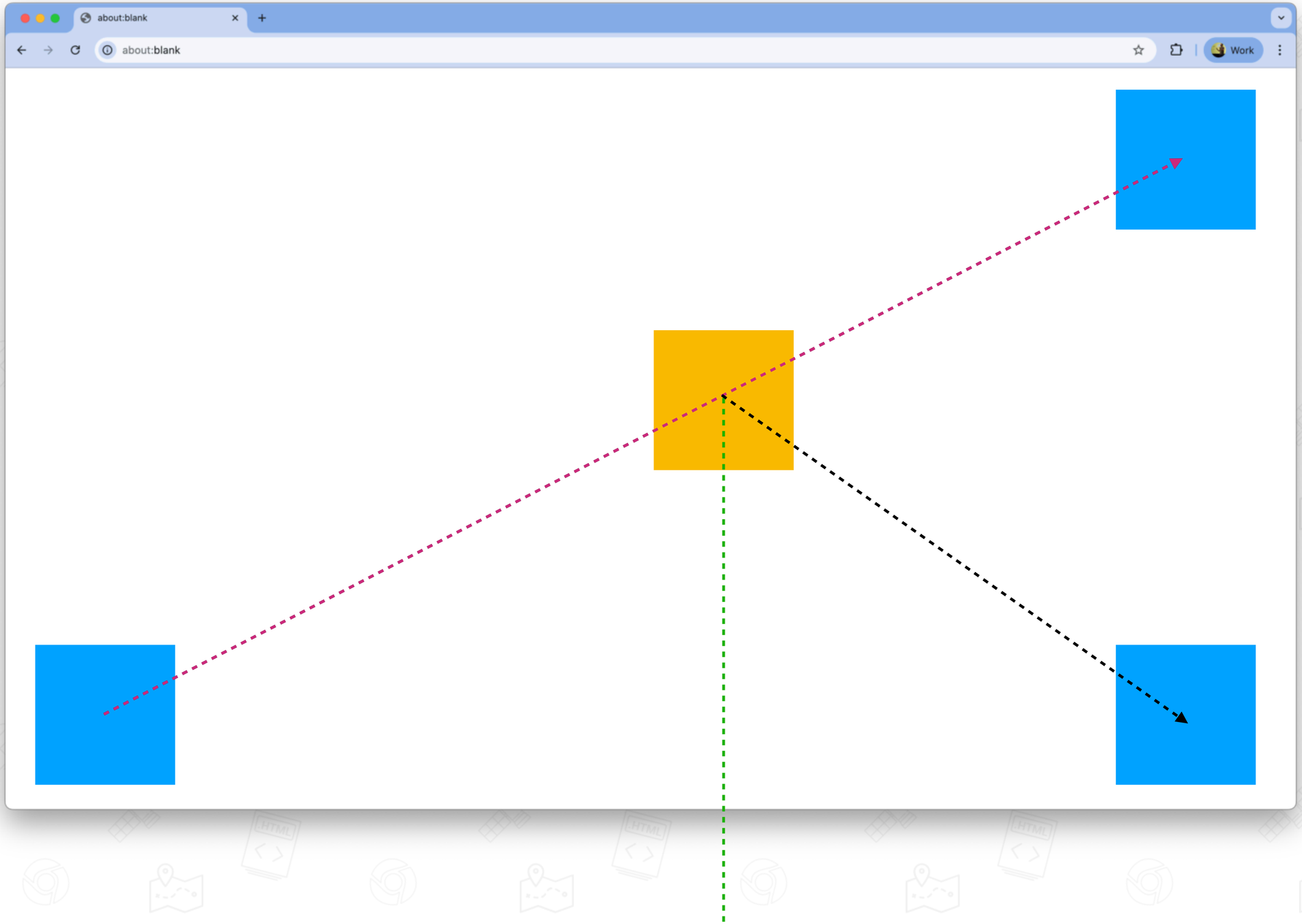



https://codepen.io/bramus/full/YPKjyVM/8879924fa74779c696b4fe415d391751


WIP
Retargetable View Transitions, Redu
https://cdpn.io/pen/debug/
Inspector
Console
Search HTML
<!DOCTYPE html>
<html lang="en"> event
<head> </head>
<body> </body> grid
</html>
Click anywhere on the page to move the dot to that location
html › body
Rules
Layout
Computed
Changes
Compatibility
Filter Styles
:hov .cls
element { }
body { inline:28
display: grid;
place-content: center;
}
html, body { inline:19
margin: 0;
padding: 0;

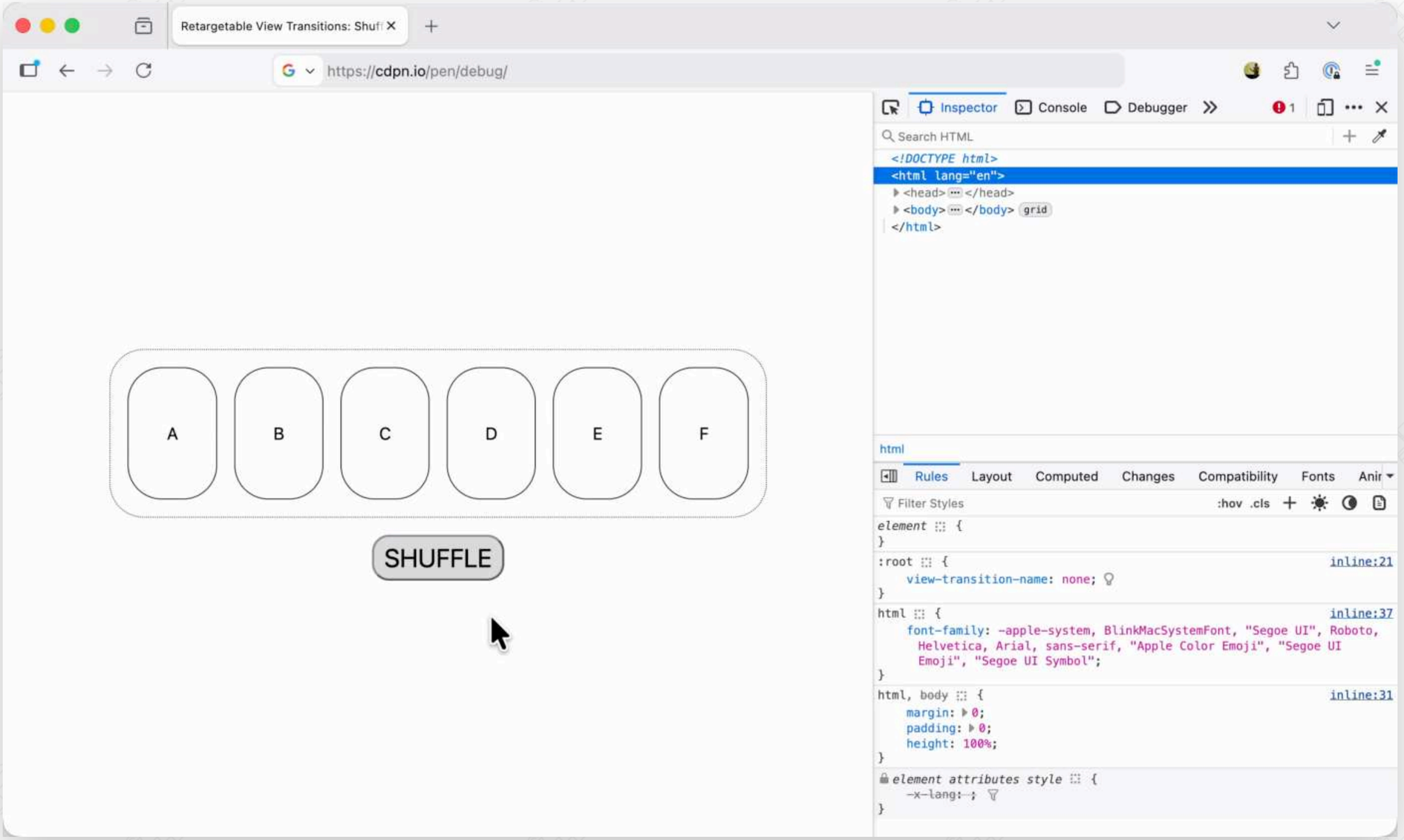



https://bsky.app/profile/kvndy.bsky.social/post/3ly3vxj7uq22q


about:blank
about:blank
Work

```
const delta = `translate3d(
  ${old_discrete_x - new_discrete_x}px,
  ${old_discrete_y - new_discrete_y}px,
  0px
)`;

const keyframes = [
  { transform: delta },
  { transform: 'translate3d(0px ,0px, 0px)' }
];

const effect = new KeyframeEffect($element, keyframes, {
  duration: duration * 1000,
  easing: easing,
  fill: "backwards",
  composite: "accumulate"
});

const animation = new Animation(effect, document.timeline);
```

https://codepen.io/bramus/full/NPrNrgY/75a434c85ee0409356ecb321218624d7


Retargetable View Transitions: Shuff
https://cdpn.io/pen/debug/
A
B
C
D
E
F
SHUFFLE
Inspector
Console
Debugger
Search HTML
<!DOCTYPE html>
<html lang="en">
<head> ··· </head>
<body> ··· </body> grid
</html>
html
Rules
Layout
Computed
Changes
Compatibility
Fonts
Filter Styles
:hov .cls
element {
}
:root {
view-transition-name: none;
}
inline:21
html {
font-family: -apple-system, BlinkMacSystemFont, "Segoe UI", Roboto, Helvetica, Arial, sans-serif, "Apple Color Emoji", "Segoe UI Emoji", "Segoe UI Symbol";
}
inline:37
html, body {
margin: 0;
padding: 0;
height: 100%;
}
inline:31
element attributes style {
}

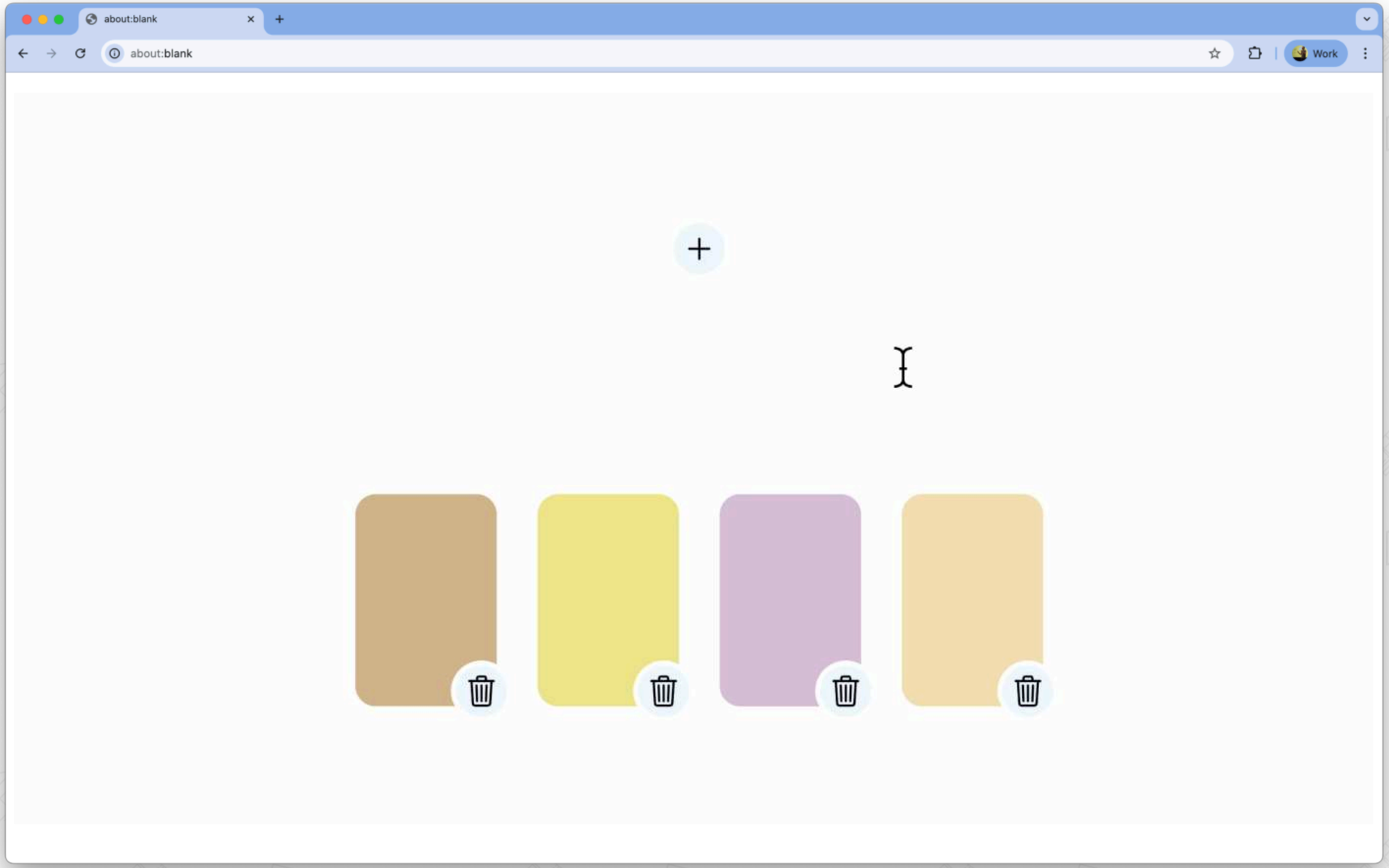
WIP

Critique #5

# *“Your code is now riddled with conditionals to start a View Transition or not”*

x Experimental Hack
with a MutationObserver
or DIY StyleObserver

*Your ADHD brain*




https://codepen.io/bramus/pen/oNOZyZj

```
$$('.cards').addEventListener('click', e => {
    if (e.target.classList.contains('delete-btn')) {
        if (!document.startViewTransition) {
          e.target.parentElement.remove();
          return;
        }

        document.startViewTransition(() => {
            e.target.parentElement.remove();
        });
    }
});
```

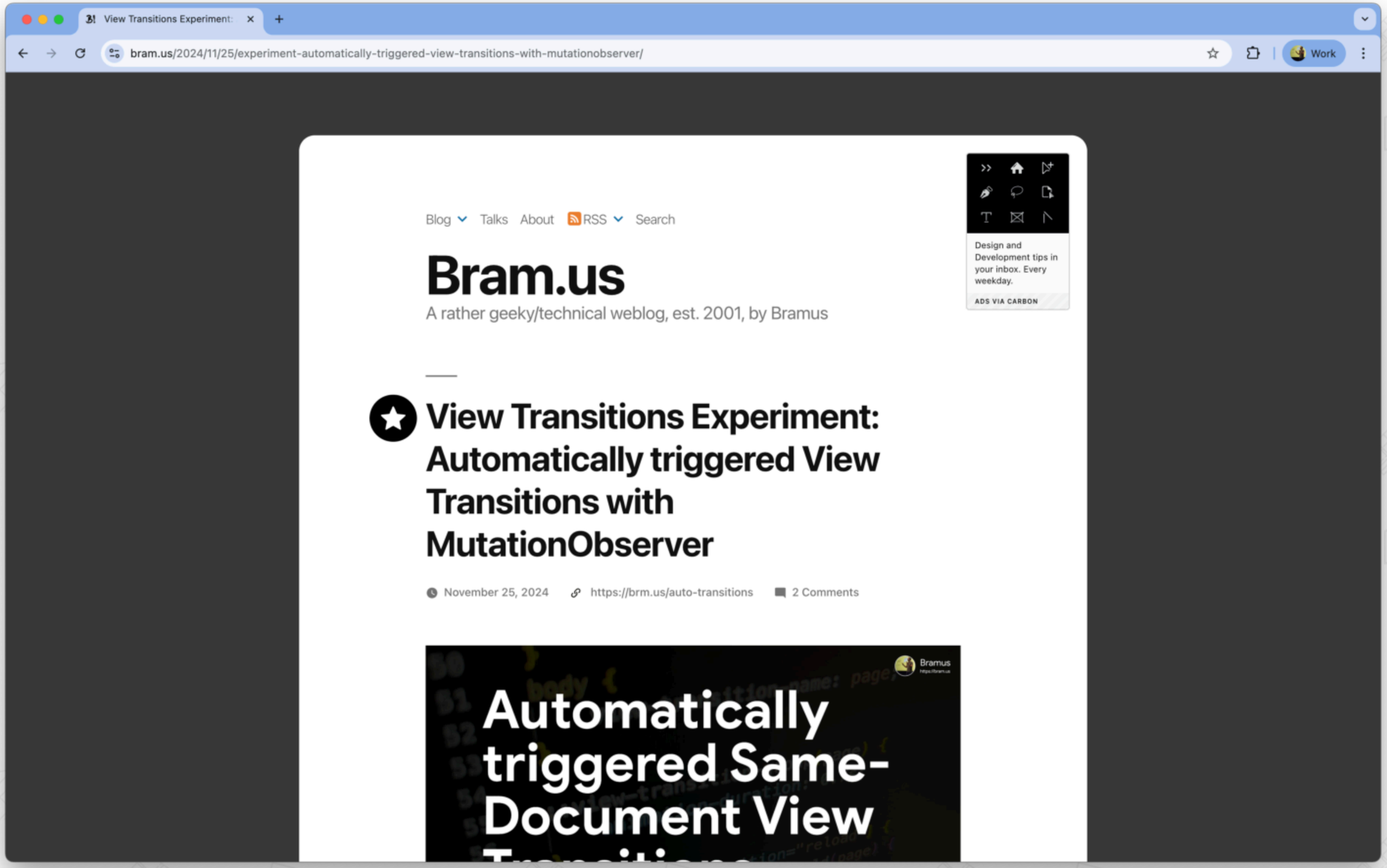
```
$('#add').addEventListener('click', async (e) => {
    const template = $('#card');
    const $newCard = template.content.cloneNode(true);
    $newCard.firstElementChild.style.backgroundColor = randomColor();
    if (!document.startViewTransition) {
        $('.cards').appendChild($newCard);
        return;
    }

    document.startViewTransition(() => {
        $('.cards').appendChild($newCard);
    });
});
```

*“What if I could keep the original code, and tack on the View Transitions part?”*


*Me, burning the midnight oil*

```
$$('.cards').addEventListener('click', e => {
    if (e.target.classList.contains('delete-btn')) {
        e.target.parentElement.remove();
    }
})

$('#add').addEventListener('click', async (e) => {
    const template = $('#card');
    const $newCard = template.content.cloneNode(true);
    $newCard.firstElementChild.style.backgroundColor = randomColor();
    document.querySelector('.cards').appendChild($newCard);
});
```

```
const observer = new MutationObserver(async (mutations) => {
  for (const mutation of mutations) {
    if (mutation.addedNodes.length) {
      const $li = Array.from(mutation.addedNodes)
        .find(n => n.nodeName == 'LI');

      // …

      // Undo the addition, and then re-added it in a VT
      $li.remove();
      const t = document.startViewTransition(() => {
        mutation.target.insertBefore($li, mutation.nextSibling);
      });

      // …
    }
  }
});
```



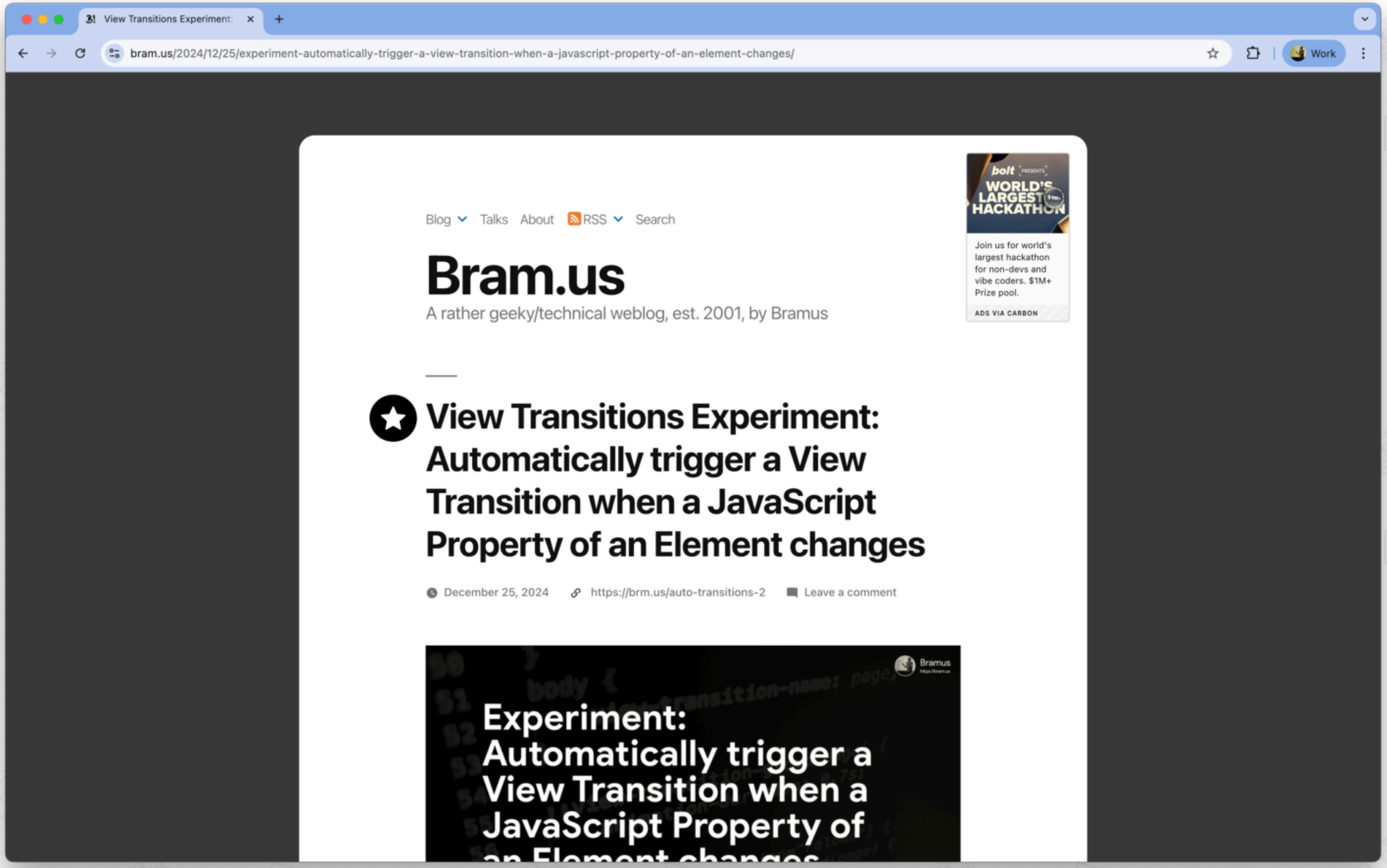

https://brm.us/auto-transitions

✔ Sync the IDL attribute to its content attribute

# “What about IDL attributes vs Content Attributes?”

✗ Experimental Hack with a StyleObserver

*Me, burning the midnight oil, again*




https://brm.us/auto-transitions-2

Critique #6

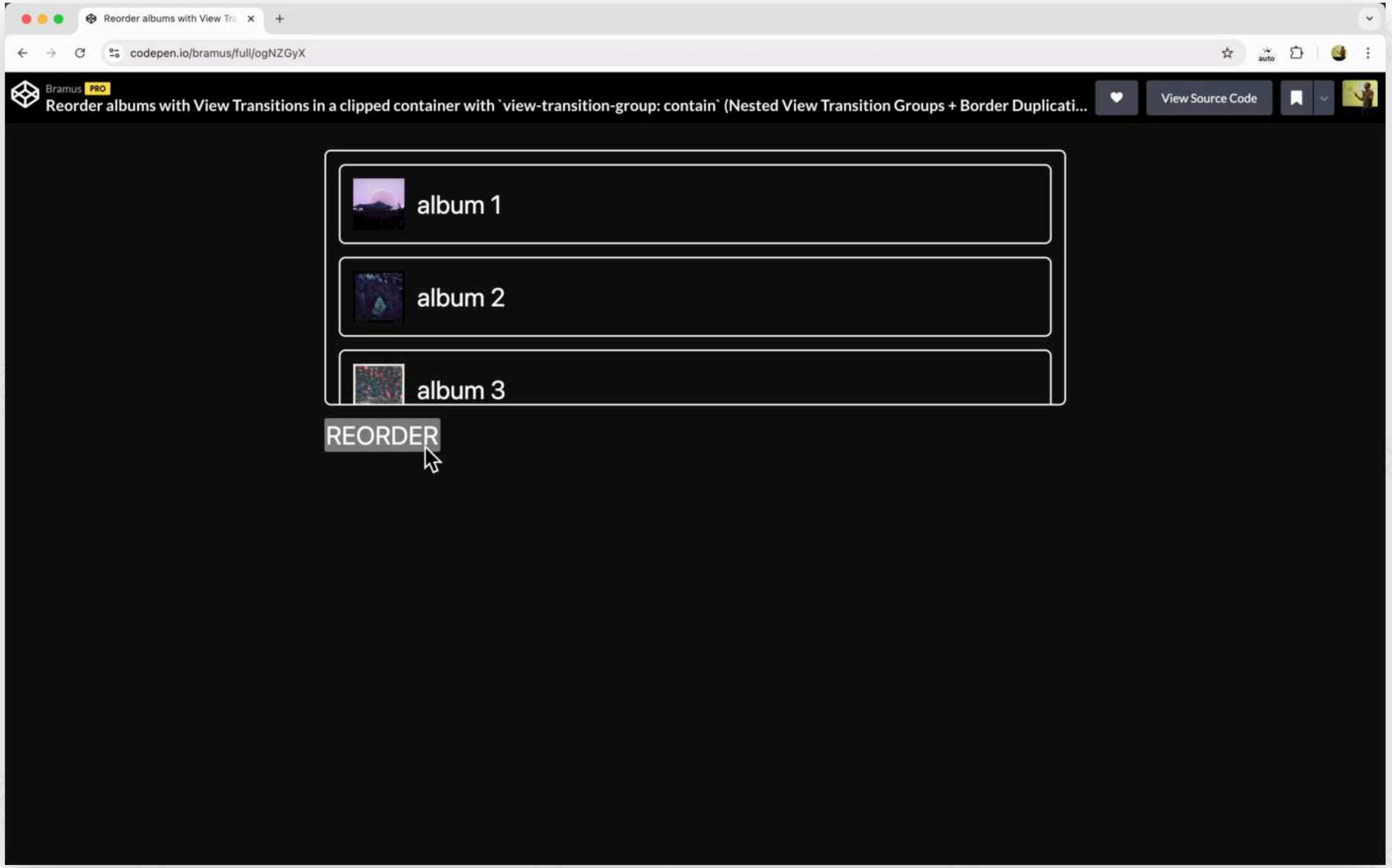
✔ Manually clip the contents

✔ Use Element-Scoped View Transitions

# “Snapshotted elements bleed out of their container”

✔ Use Nested View Transition Groups

*Everyone*




https://codepen.io/bramus/full/ogNZGyX


```
ul {
    view-transition-name: albums-wrapper;
    view-transition-group: contain;
}

ul li {
    view-transition-name: match-element;
    view-transition-class: album;
}
```

https://codepen.io/bramus/full/ogNZGyX


::view-transition
└ ::view-transition-group(albums-wrapper)
├ ::view-transition-group-children(albums-wrapper)
├ ::view-transition-group(album-1)
└ ::view-transition-image-pair(album-1)
├ ::view-transition-old(album-1)
└ ::view-transition-new(album-1)
├ ::view-transition-group(album-2)
└ ::view-transition-image-pair(album-2)
├ ::view-transition-old(album-2)
└ ::view-transition-new(album-2)
└ ::view-transition-group(album-3)
└ ::view-transition-image-pair(album-3)
├ ::view-transition-old(album-3)
└ ::view-transition-new(album-3)
└ ::view-transition-image-pair(albums-wrapper)
├ ::view-transition-old(albums-wrapper)
└ ::view-transition-new(albums-wrapper)
144
X
X


```
::view-transition-group-children(albums-wrapper) {
    overflow: clip;
}
```

https://codepen.io/bramus/full/ogNZGyX

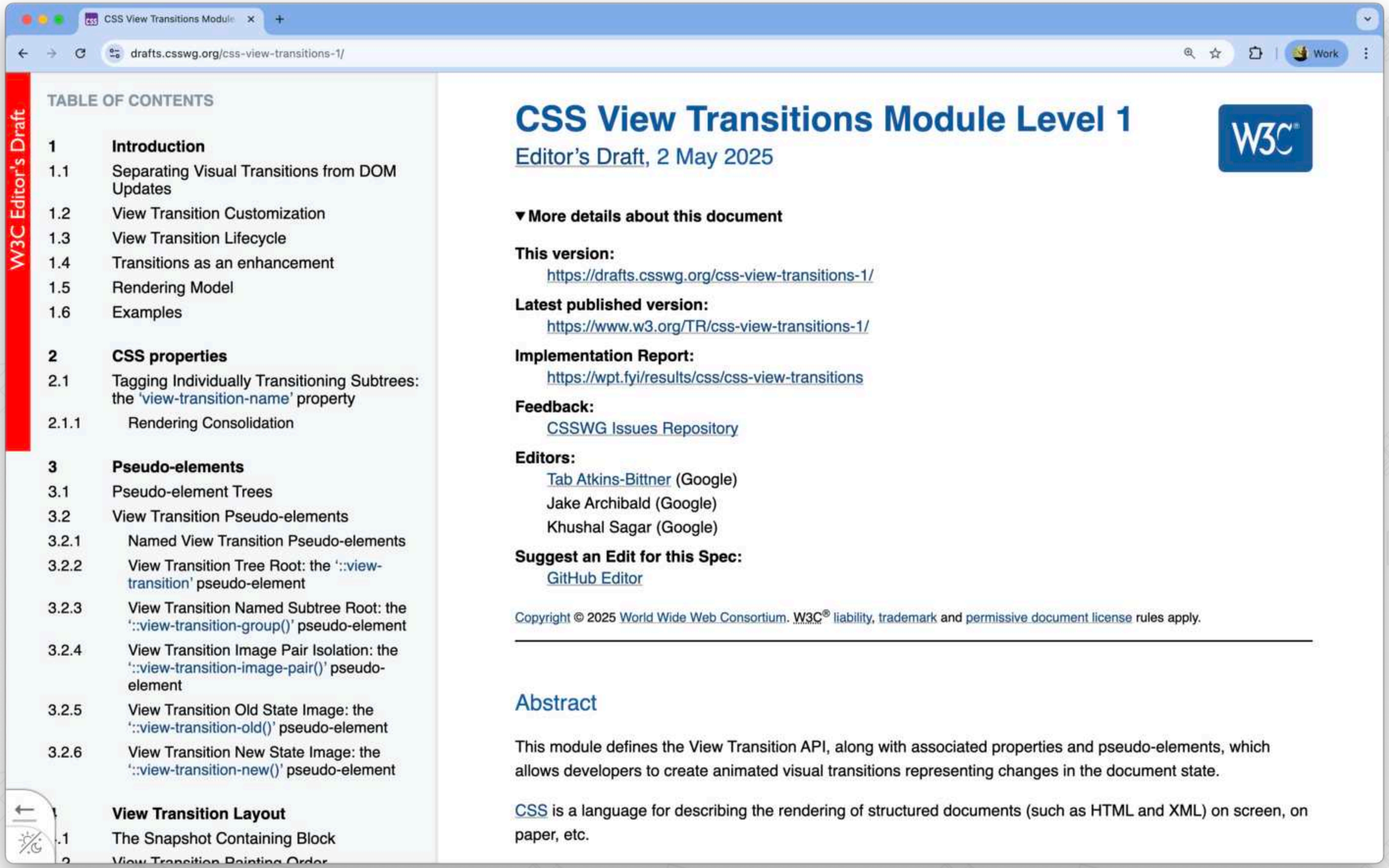

```
$list.startViewTransition(…);
```

*Element-Scoped View Transition*

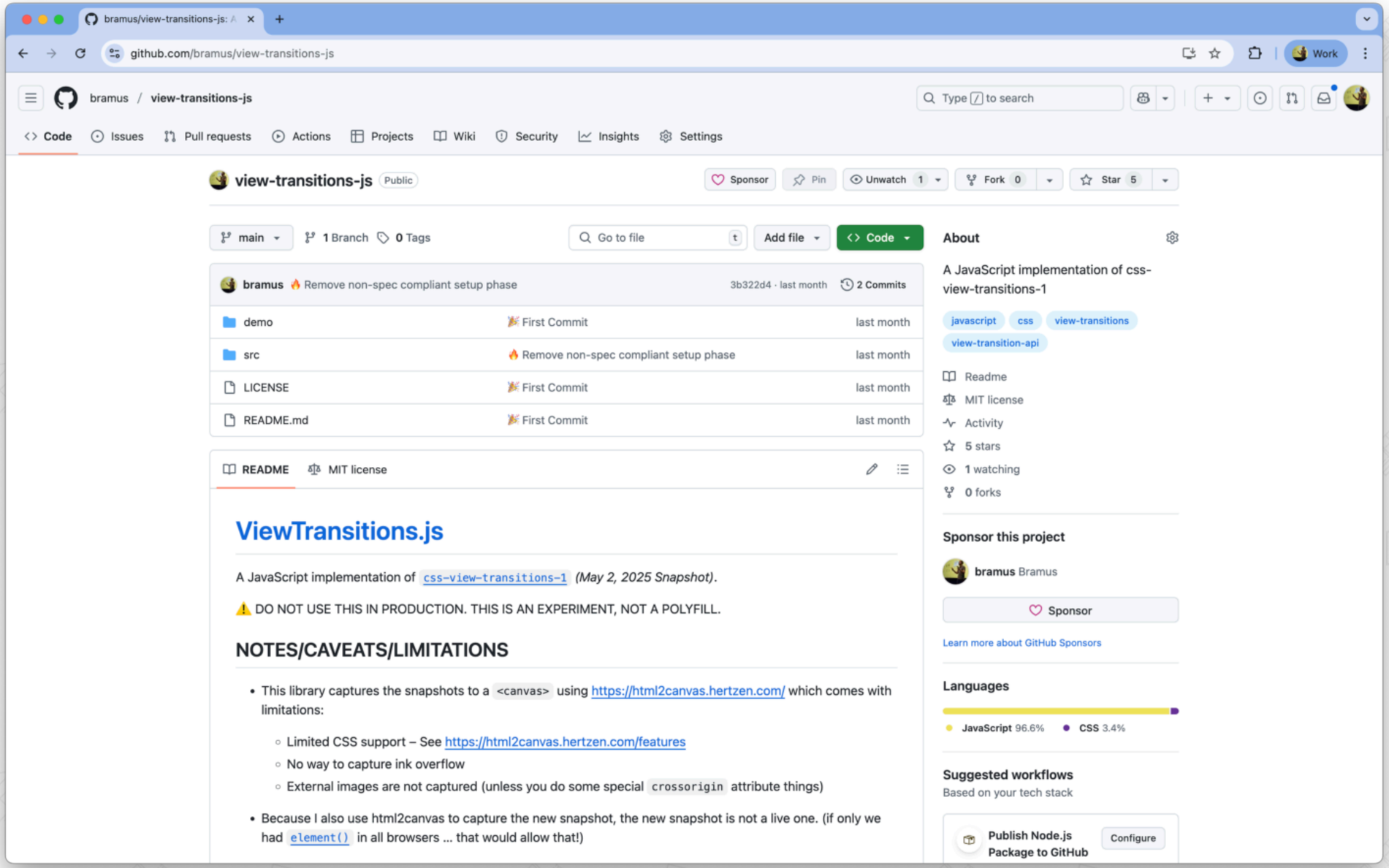
Critique #7

# “You can’t polyfill it”


*Your colleague who thinks websites need to look the same in every browser*



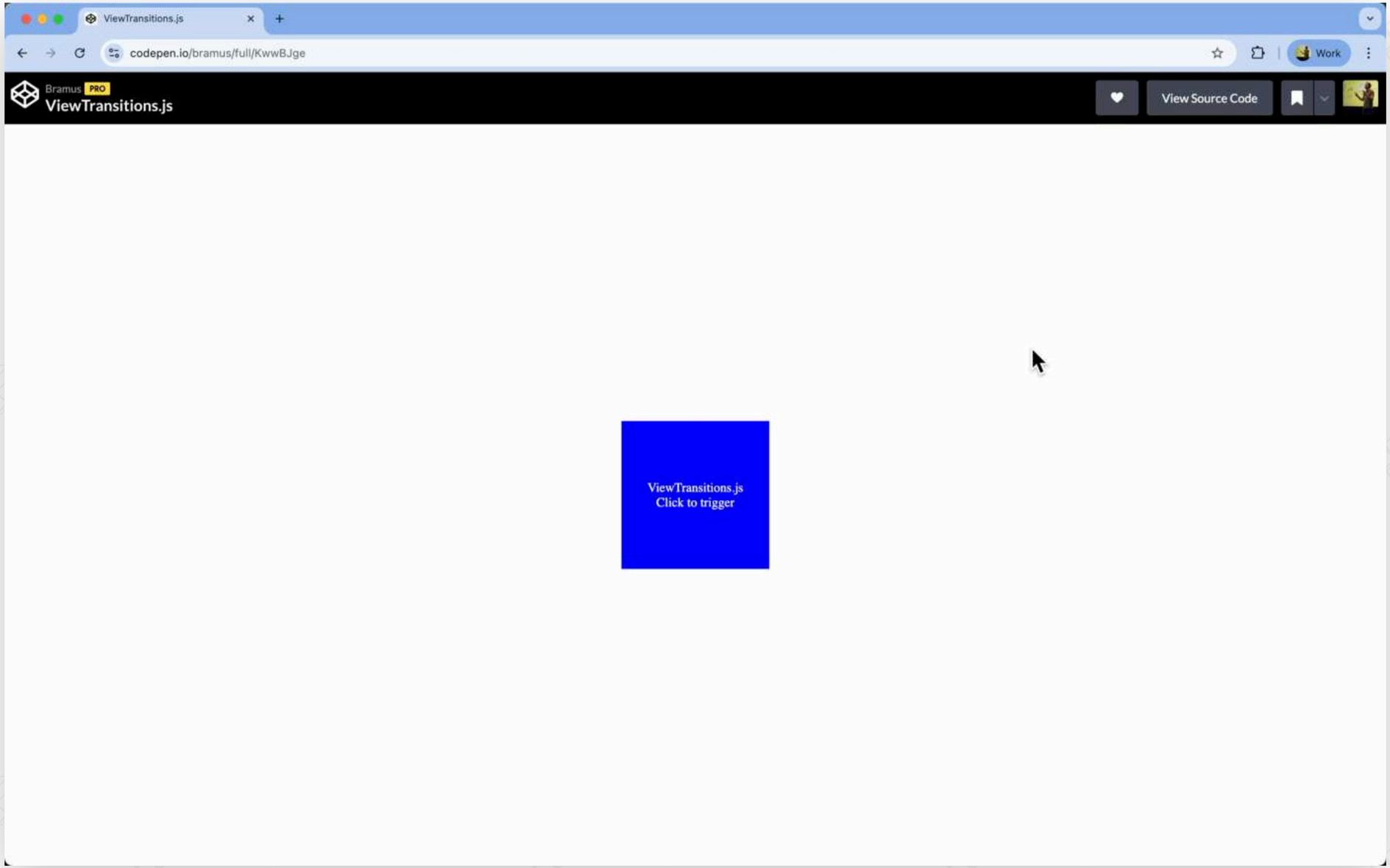

https://drafts.csswg.org/css-view-transitions-1/




https://github.com/bramus/view-transitions-js

# DO NOT USE THIS IN PRODUCTION. THIS IS AN EXPERIMENT, NOT A POLYFILL.

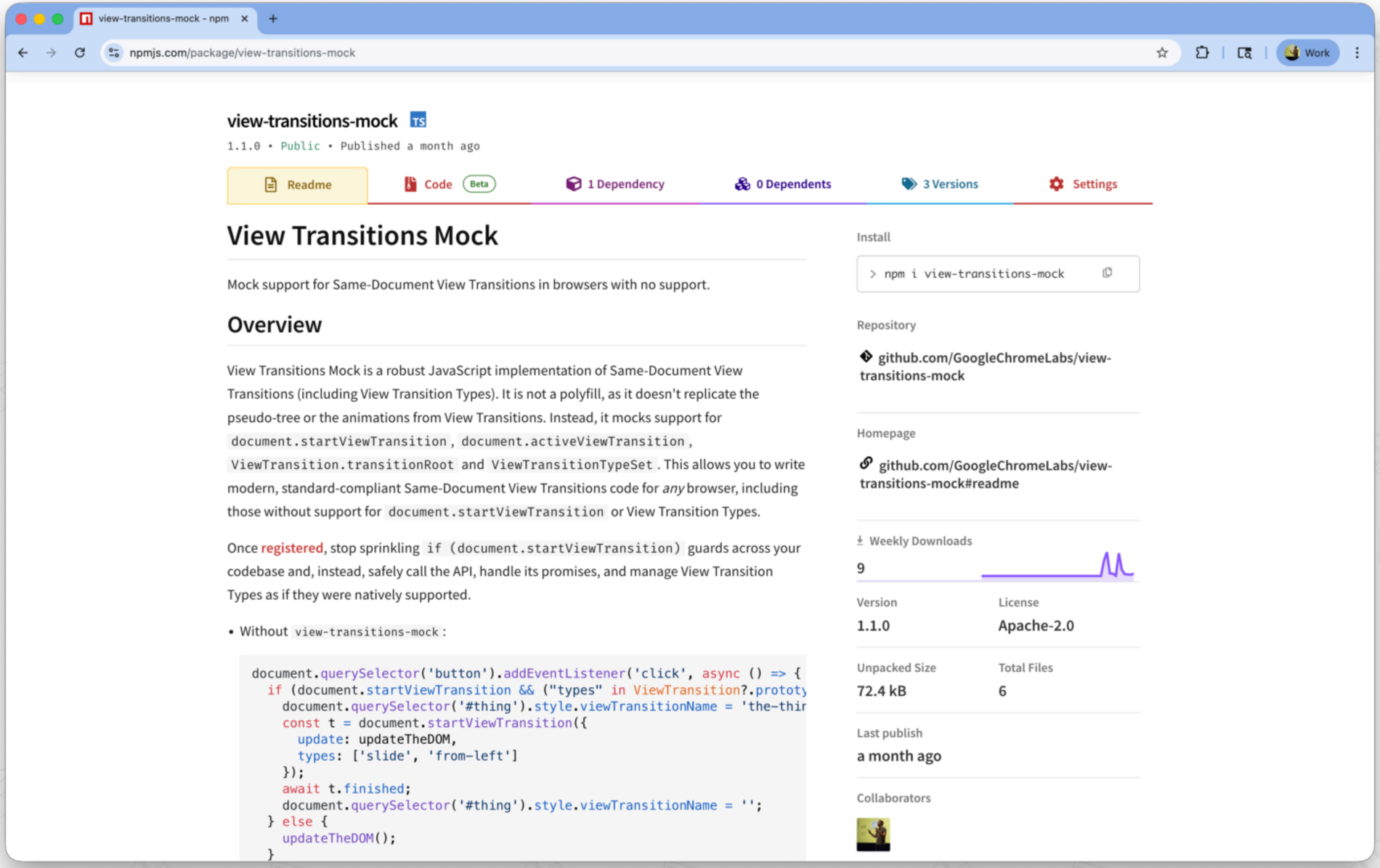
*Me, trying to warn you*



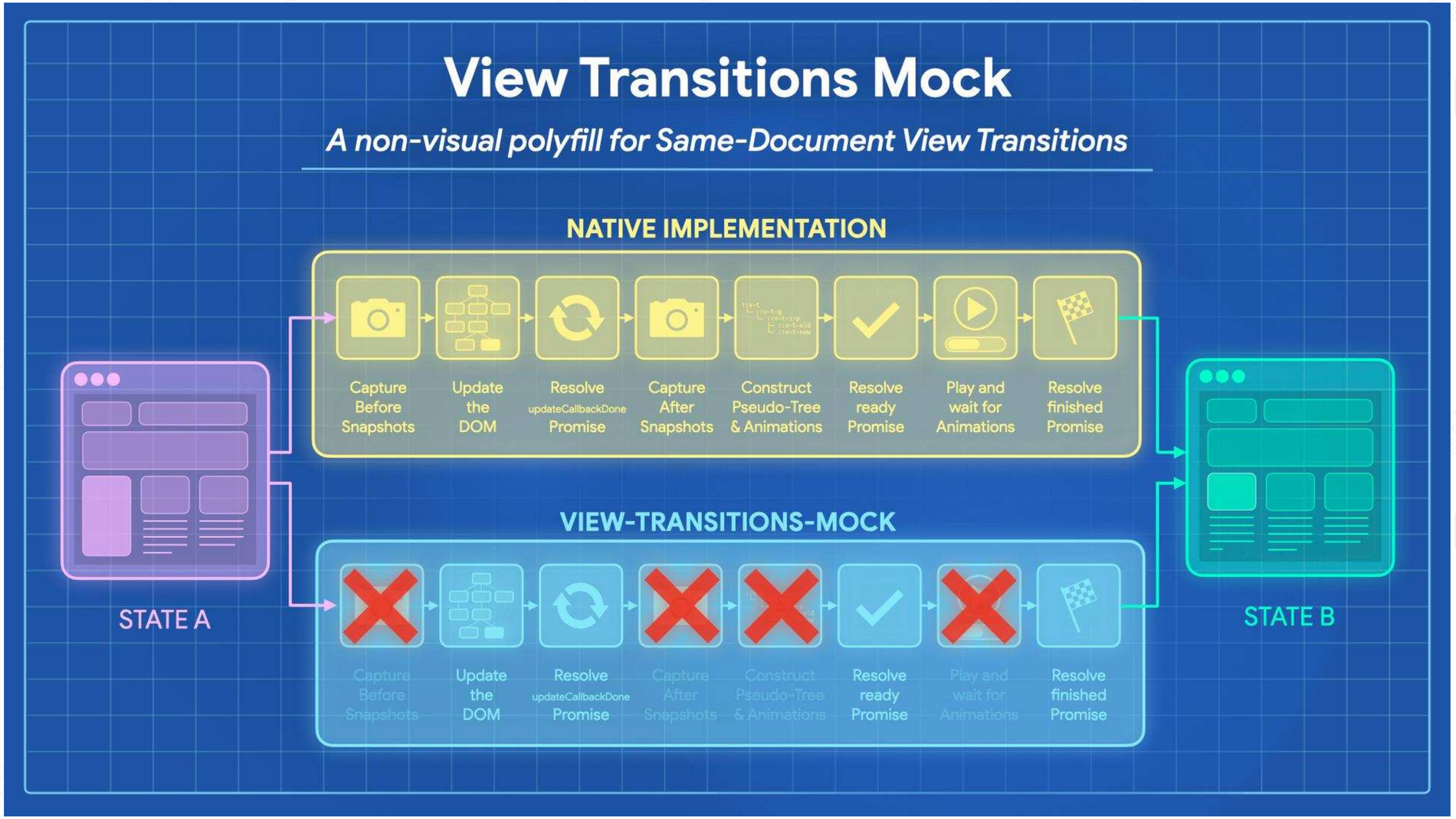

https://codepen.io/bramus/pen/KwwBJge

# But what if I split off the JavaScript surface from the animation bits?

*Me, a few weeks later*




https://www.npmjs.com/package/view-transitions-mock



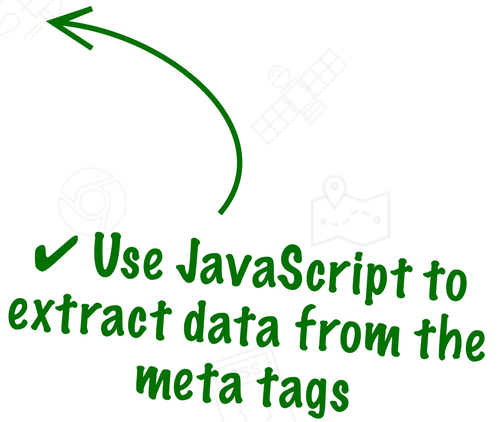

https://www.npmjs.com/package/view-transitions-mock

```
import { register } from "view-transitions-mock";
register();
```

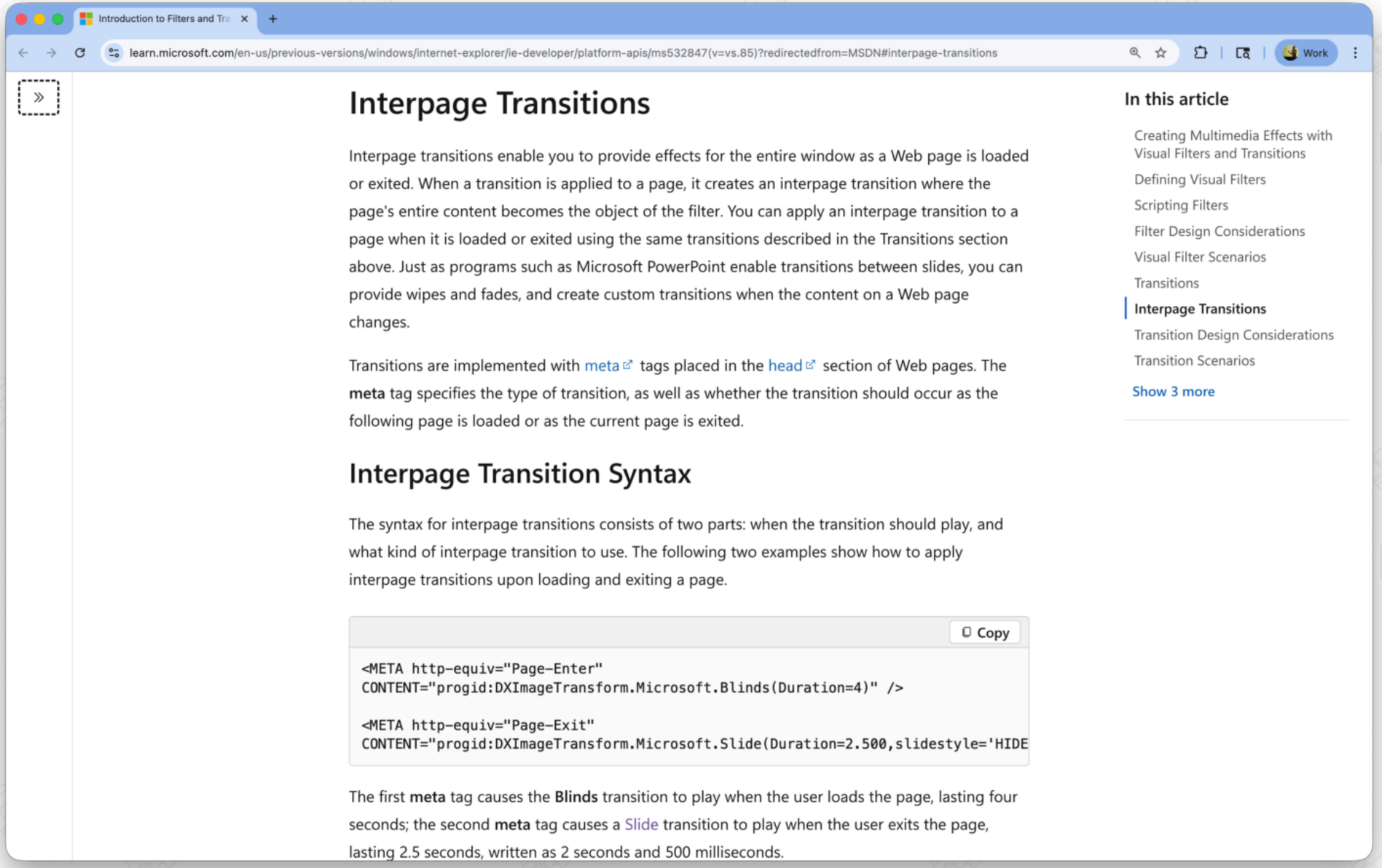
https://www.npmjs.com/package/view-transitions-mock

Critique #8

# “Internet Explorer did it first”



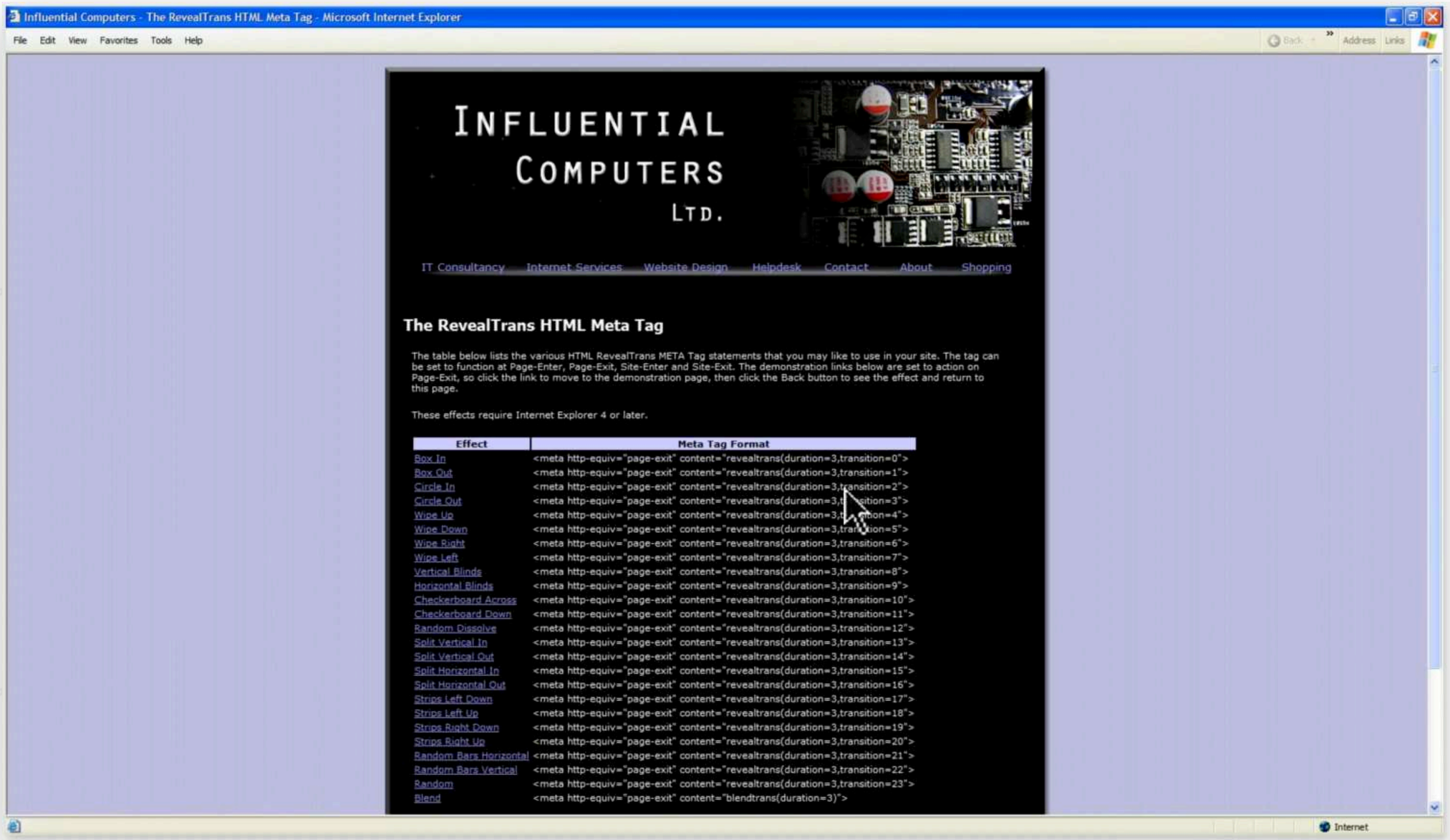

*Those who are old enough to remember*




https://brm.us/interpage-transitions

*“Just like Microsoft PowerPoint enables transitions between slides, you can provide wipes and fades [...] when the content on a Web page changes.”*

https://brm.us/interpage-transitions



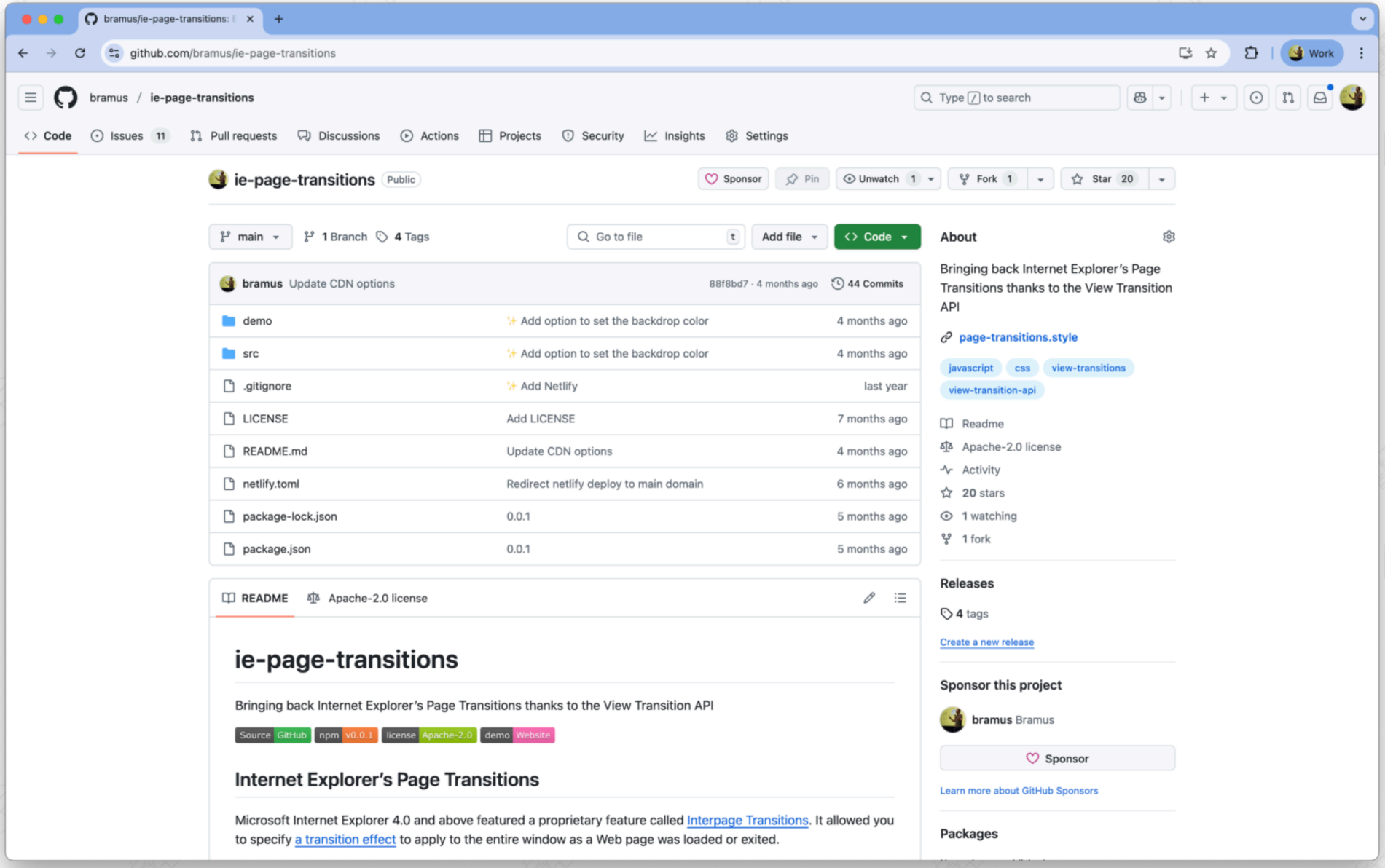

https://www.influentialcomputers.com/meta-reveal-demo.asp (IE6)

```
<meta http-equiv="Page-Enter" content="revealTrans(Duration=0.5,Transition=23)">
<meta http-equiv="Page-Exit" content="revealTrans(Duration=0.5,Transition=23)">
```

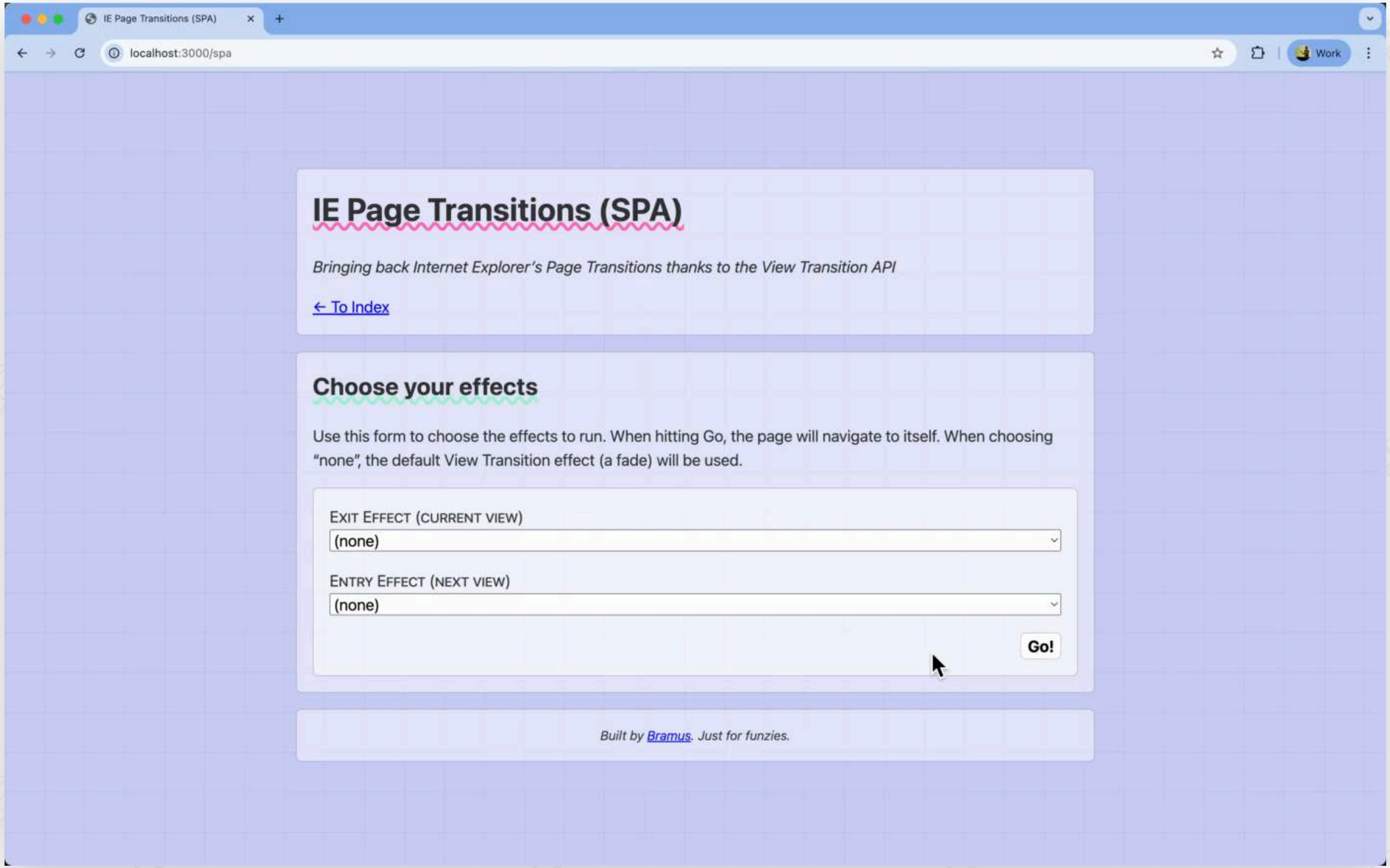
# Interpage Transitions Effects

| | | | | |
|---|---|---|---|---|
| 0 = box-in | 5 = wipe-down | 10 = checkerboard across | 15 = split-horizontal-in | 20 = strips-right-up |
| 1 = box-out | 6 = wipe-right | 11 = checkerboard down | 16 = split-horizontal-out | 21 = random-bars-horizontal |
| 2 = circle-in | 7 = wipe-left | 12 = random dissolve | 17 = strips-left-down | 22 = random-bars-vertical |
| 3 = circle-out | 8 = vertical-blinds | 13 = split-vertical-in | 18 = strips-left-up | 23 = random effect |
| 4 = wipe-up | 9 = horizontal-blinds | 14 = split-vertical-out | 19 = strips-right-down | |

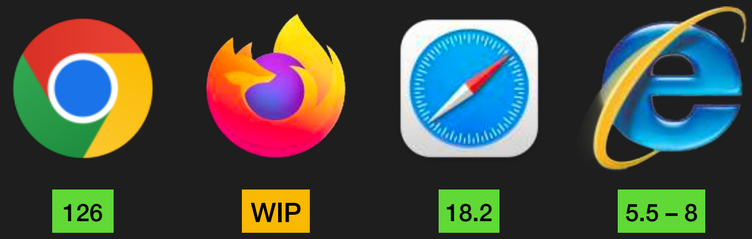
*https://brm.us/reveal-trans-filter*



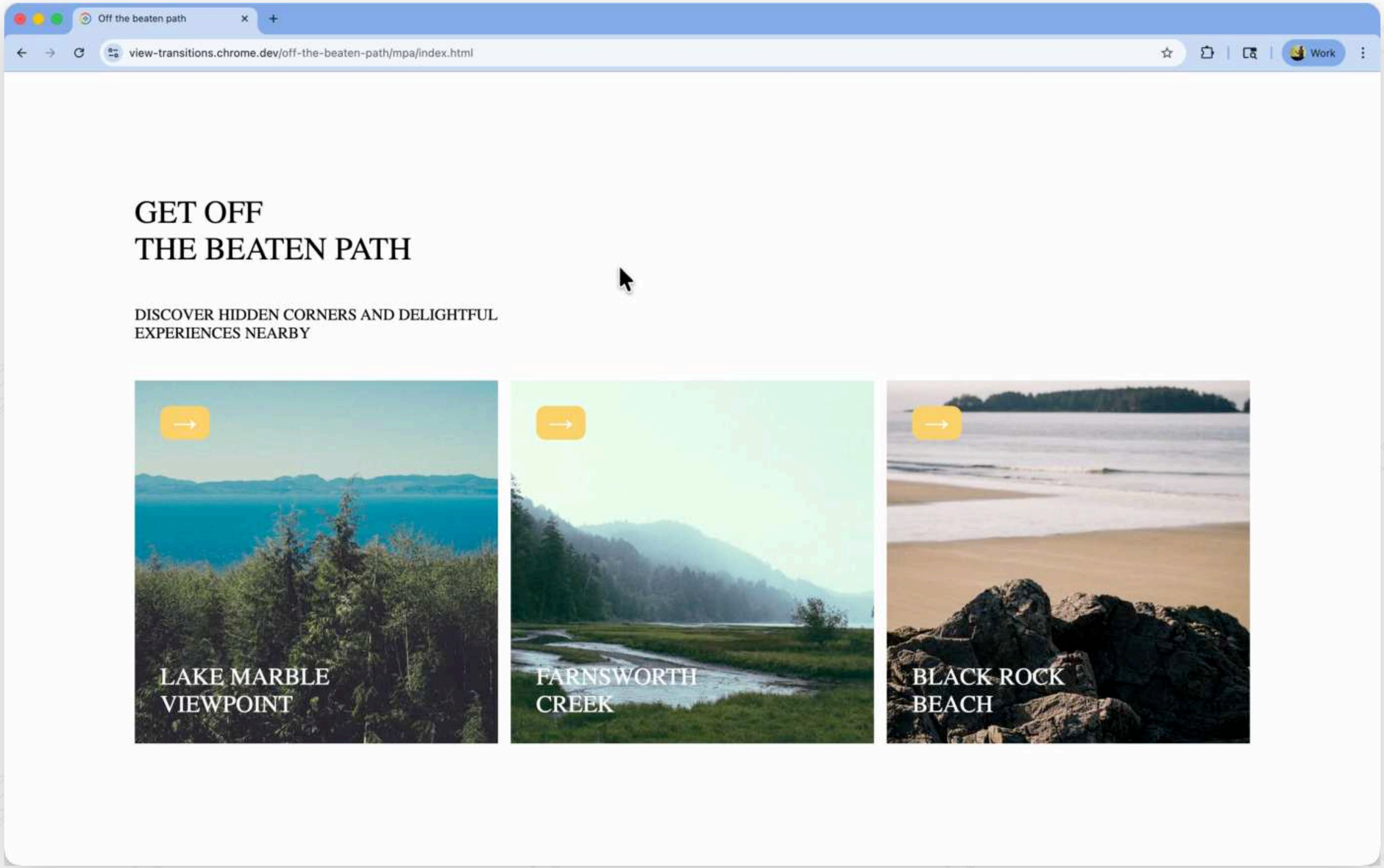

https://github.com/bramus/ie-page-transitions



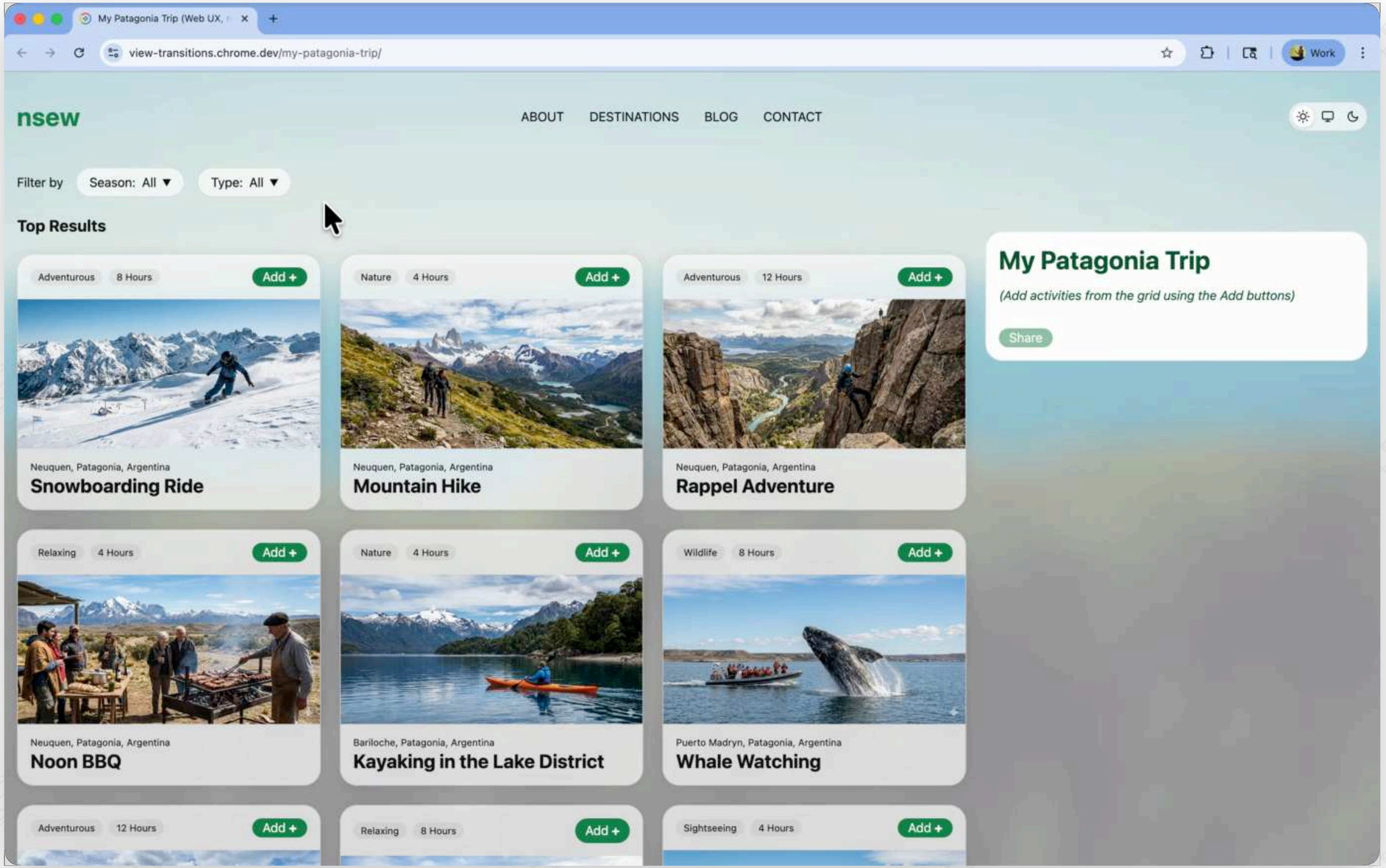

https://page-transitions.style/




```
<meta http-equiv="Page-Enter" content="revealTrans(Duration=0.5,Transition=23)">
<meta http-equiv="Page-Exit" content="revealTrans(Duration=0.5,Transition=23)">

<style>
    @view-transition {
        navigation: auto;
    }
</style>

<link rel="stylesheet" href="ie-page-transitions.css">
<script src="ie-page-transitions.mpa.js" type="module" blocking="render"></script>
```




https://view-transitions.chrome.dev/off-the-beaten-path/mpa/




https://view-transitions.chrome.dev/my-patagonia-trip/

# Thanks / Questions



🦋 @bram.us

🦣 @bramus@front-end.social

~~𝕏 @bramus~~

https://www.bram.us/