A close-up photograph of a man's face in profile, facing right. He has light brown hair and a short beard. He is holding a straight razor against his cheek, just below his eye. A white speech bubble with a black outline is positioned in front of him, containing the text "The Bleeding Edge of HTML5".

The Bleeding Edge
of HTML5

Brandon Satrom
@brandonsatrom



My Dad works on Kendo UI.
We live in Austin, TX



He blogs at
UserInexperience.com
and is
@BrandonSatrom on
Twitter

Also, I pooped.

**Program Manager
for Kendo UI**



KendoUI.com

Program Manager
for Kendo UI

Whatever that means...

KendoUI.com



02.02.13



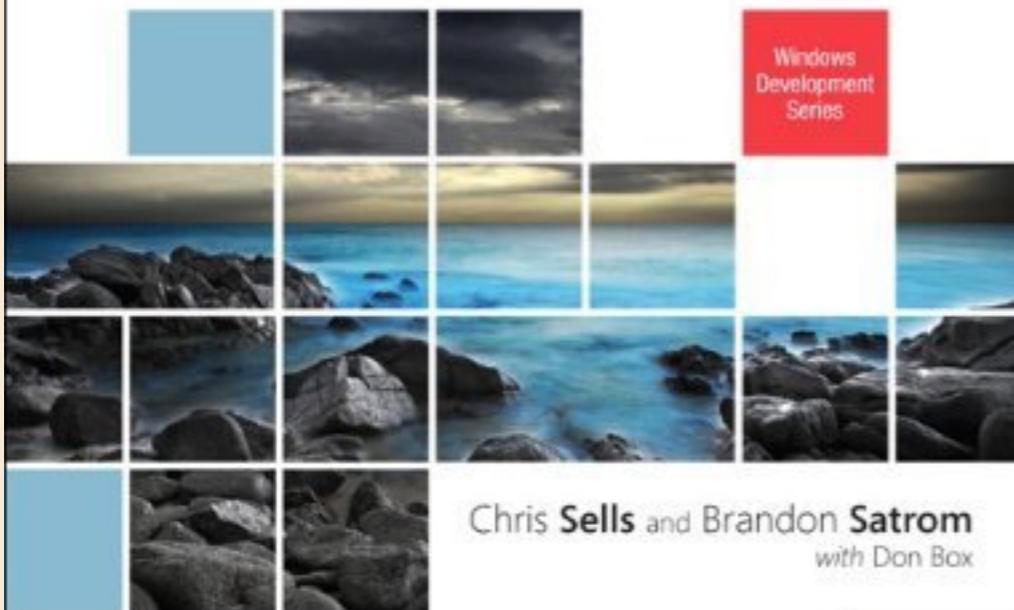
February 1-3,
2013
Austin, TX

HTML5tx.com
@html5tx

Forewords by **Chris Anderson** and **Rey Bango**



Building Windows 8 Apps *with JavaScript*



Buy my Book!

<http://bit.ly/Win8Book>

Meanwhile, back in
the Enterprise...



Meanwhile, back in the Enterprise...

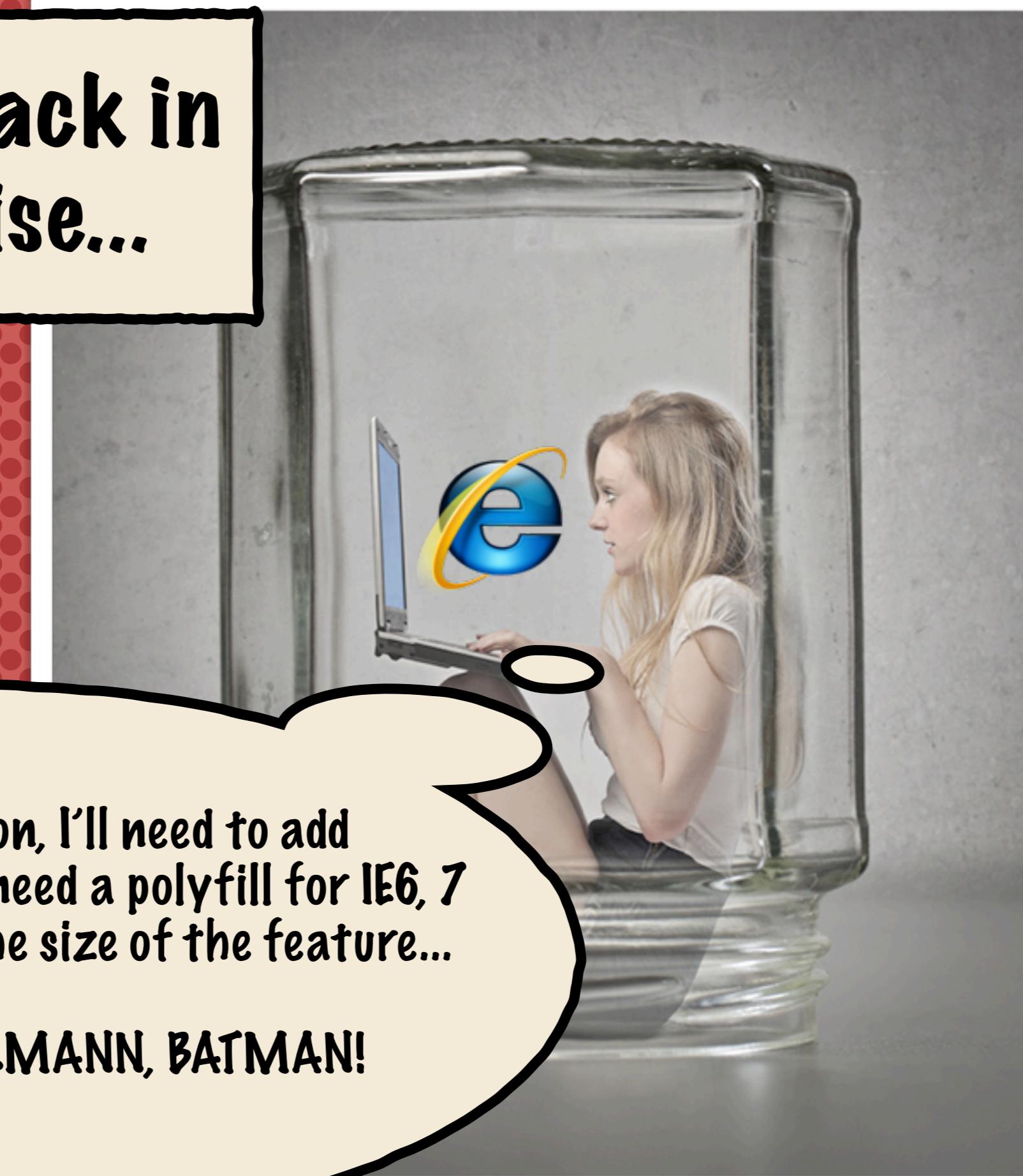
So, to use Geolocation, I'll need to add feature detection. Then I need a polyfill for IE6, 7 and 8, which will triple the size of the feature...



Meanwhile, back in the Enterprise...

So, to use Geolocation, I'll need to add feature detection. Then I need a polyfill for IE6, 7 and 8, which will triple the size of the feature...

HOLY CHRISTIAN HEILMANN, BATMAN!



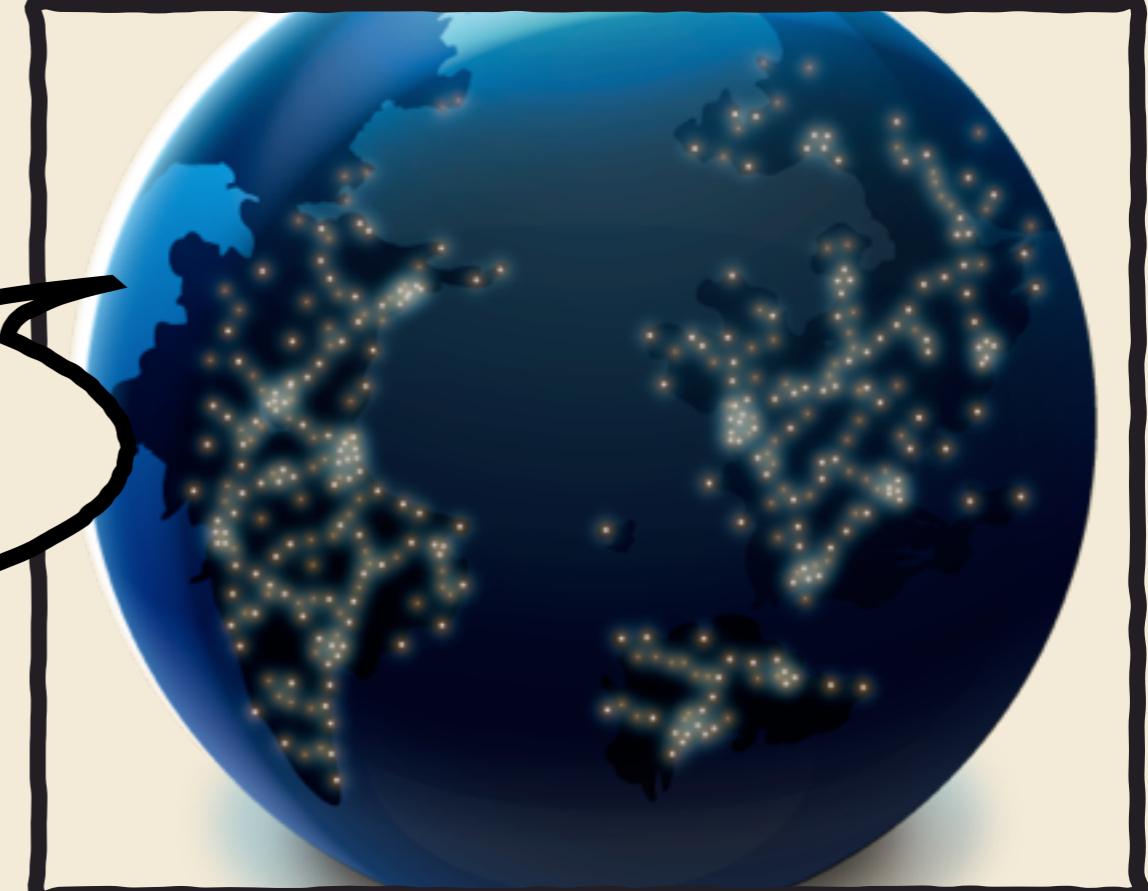
Forget practical...

... let's have some fun!*

- * If you'd rather be practical, you can watch:
<http://bit.ly/HTML5-TechEd>

**OUCH... THESE
APIS ARE
SHARP!**





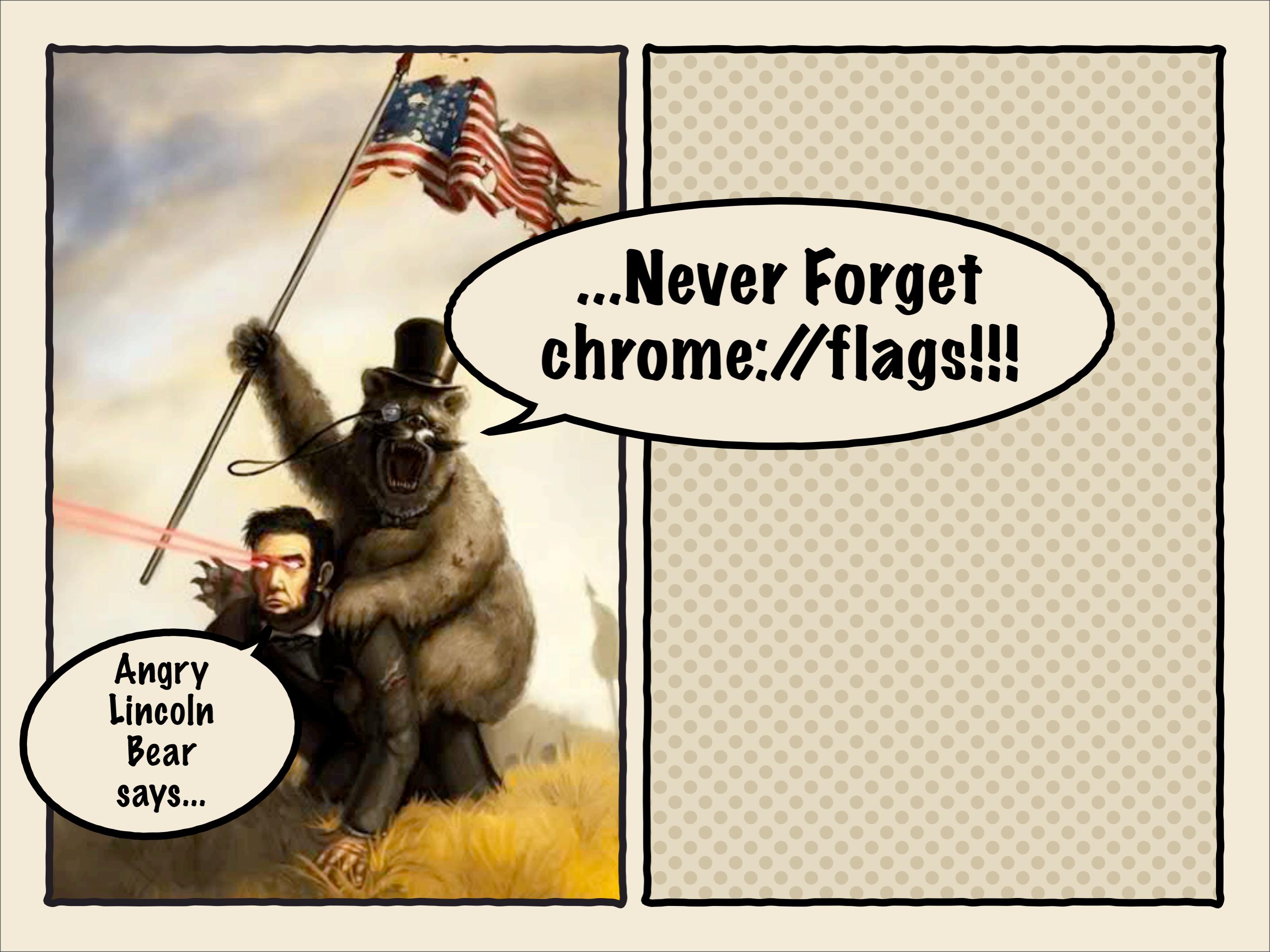
Firefox Nightly - nightly.mozilla.org

Notice!

Cutting-Edge Browsers Only!



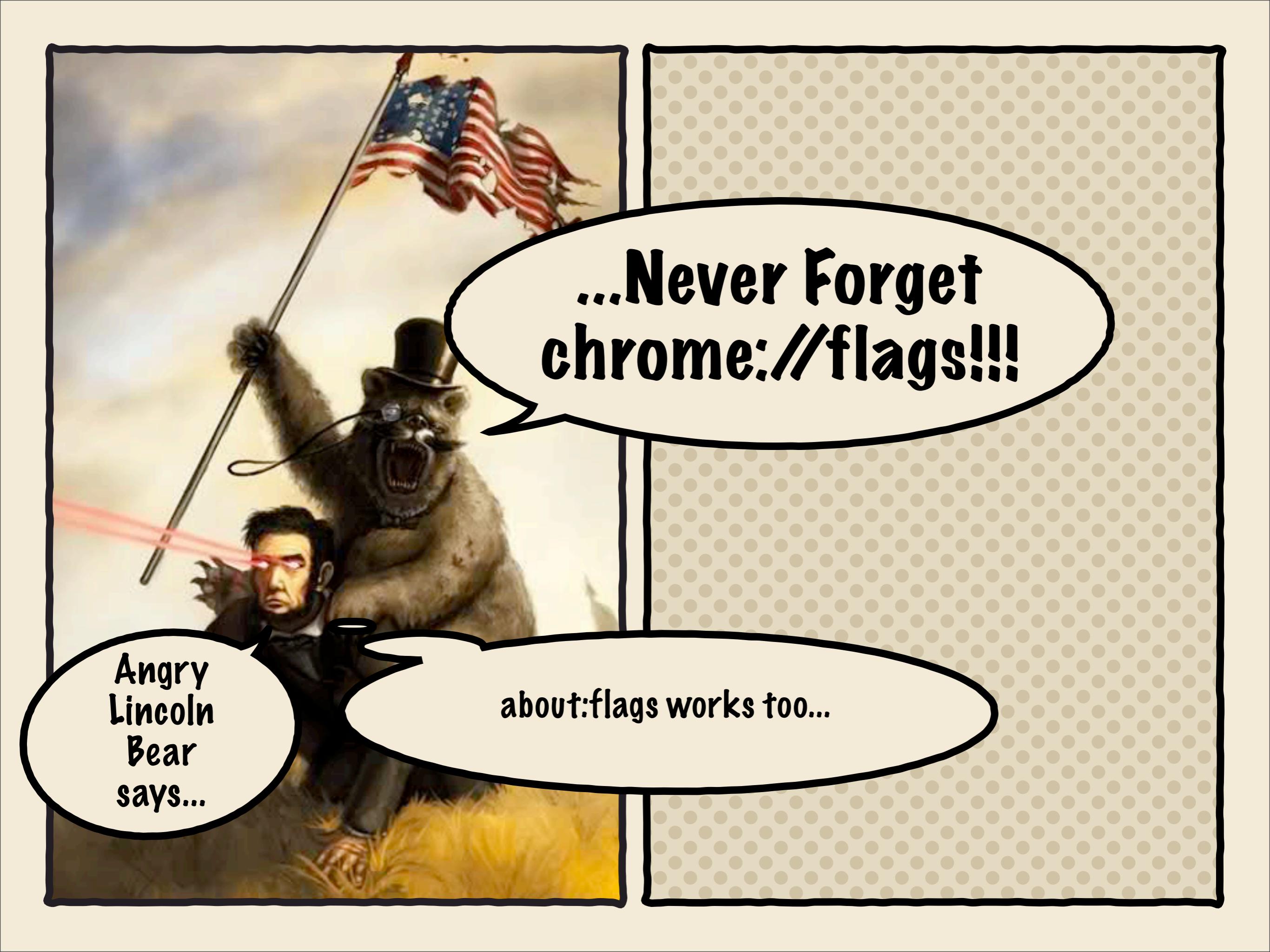
Chrome Canary - bit.ly/Chrome-Canary



An illustration of a brown bear standing on its hind legs, wearing a top hat and a suit jacket over a white shirt with a bow tie. The bear has a stern, almost Lincoln-like expression. It is holding a long rifle with a bayonet fixed. In the background, the American flag is flying from a pole. The scene is set outdoors with a cloudy sky and some trees in the distance. A speech bubble originates from the bear's mouth, containing the text "Angry Lincoln Bear says..." followed by another speech bubble containing the text "...Never Forget chrome://flags!!!".

Angry
Lincoln
Bear
says...

...Never Forget
chrome://flags!!!



...Never Forget
chrome://flags!!!

Angry
Lincoln
Bear
says...

about:flags works too...

ECMAScript

The Bleeding edge of...

[brendaneich.com/2012/10/
harmony-of-dreams-come-
true/](http://brendaneich.com/2012/10/harmony-of-dreams-come-true/)



JavaScript is like this
really big fish I caught
once...

- * Default & Rest Parameters
- * for-of iteration
- * Map & Set
- * Proxy
- * Modules
- * And more...

Default and Rest Parameters

```
function f(a = 0, b = a*a) {  
    return [a, b];  
}
```

```
var ret = f(2); // Returns [2, 4]
```

```
function f(a, b, ...others) {  
    return others.concat(a, b);  
}
```

```
ret = f(1, 2, 3, 4); // Returns [3, 4, 1, 2];
```

Modules

```
module EventAggregator {  
    export function sub() { /* ... */ }  
    export function pub() { /* ... */ }  
}  
  
import {sub, pub} from EventAggregator;  
  
import $ from  
“//code.jquery.comjquery-1.8.2.min.js”;  
  
var el = $('#main'); // No Script include!
```

Glasses

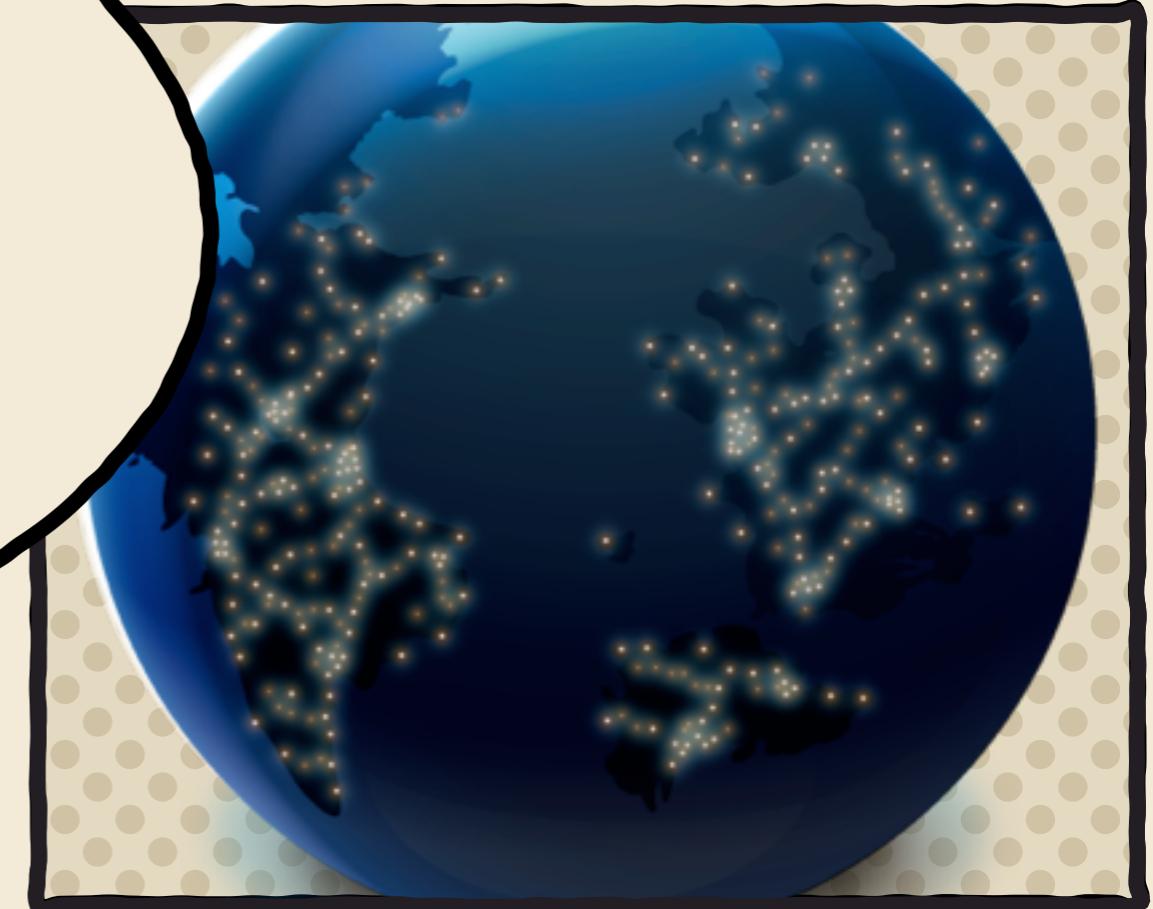
```
//Extend a ThreeJS Mesh with an
//overloaded ctor and extra properties
class SkinnedMesh extends THREE.Mesh {
  constructor(geometry, materials) {
    super(geometry, materials);

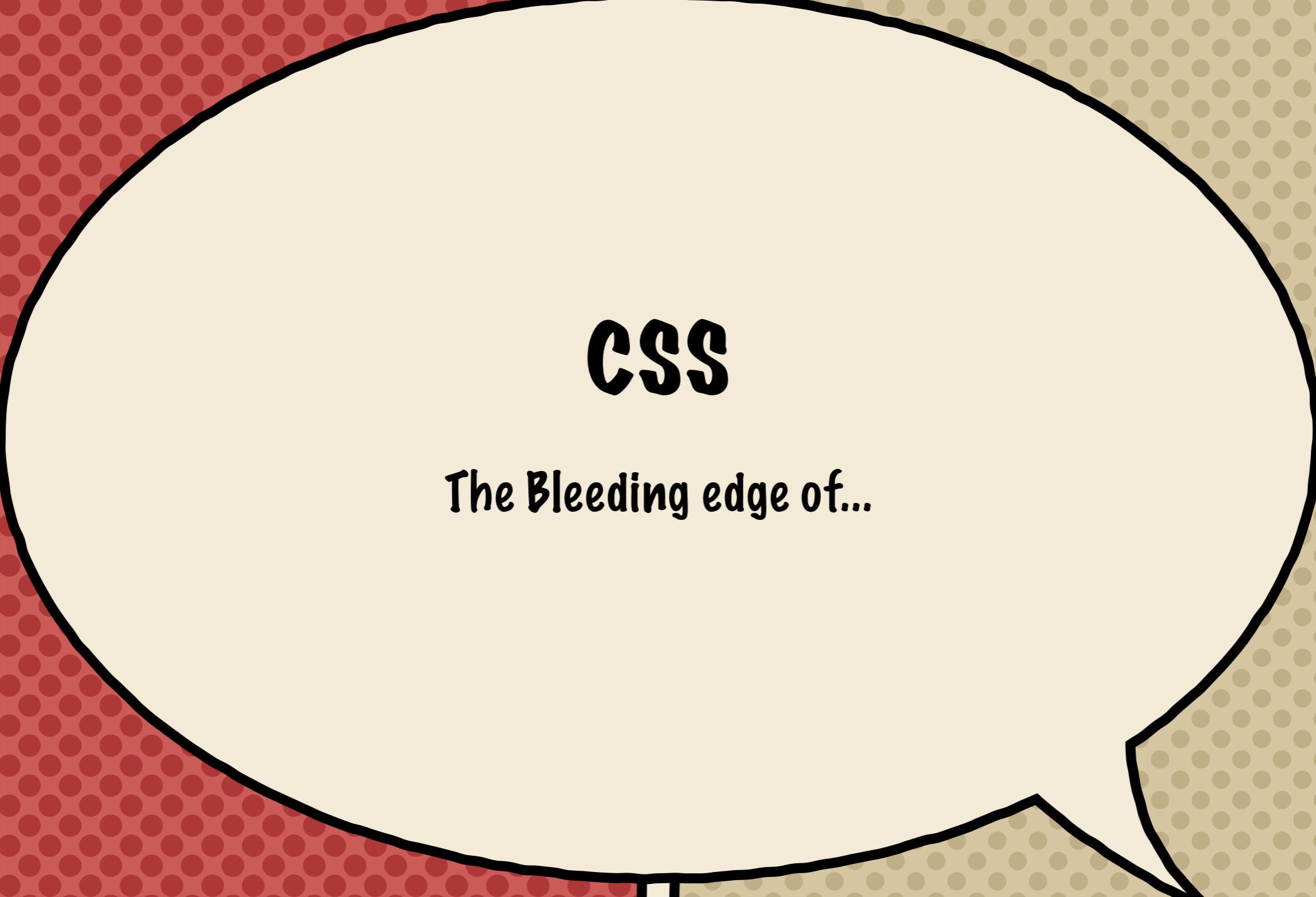
    this.idMatrix = new THREE.Matrix4();
    this.bones = [];
    this.boneMatrices = [];
    ...
  }

  update(camera) {
    ...
    super.update();
  }
}
```

EcmaScript 6

Demo Time!





CSS

The Bleeding edge of...

CSS Regions

```
<!-- HTML -->
<div id="source">
  <p> [ Really long article goes here ] </p>
</div>
<div class="container">
  <div id="region1" class="region"></div>
  <div id="region2" class="region"></div>
  <div id="region3" class="region"></div>
</div>

/* CSS */
#source { -webkit-flow-into: main; }

.region {
  -webkit-flow-from: main;
  width: 250px;
  float: left;
  margin-right: 10px;
  background: #eee;
  width: 30%;
  padding: 1%;
  margin-right: 1%;
  height: 400px;
}
```

CSS Filter Effects

```
img.sepia {  
    -webkit-filter: sepia(100%);  
    -moz-filter: sepia(100%);  
    -o-filter: sepia(100%);  
    -ms-filter: sepia(100%);  
filter: sepia(100%);  
}  
  
img.hue {  
    -webkit-filter: hue-rotate(50deg);  
    -moz-filter: hue-rotate(50deg);  
    -o-filter: hue-rotate(50deg);  
    -ms-filter: hue-rotate(50deg);  
filter: hue-rotate(50deg);  
}
```

CSS Custom Filters

```
.shader {  
    -webkit-filter: custom(none  
        mix(url(shaders/grayscale.fs)  
            normal source-atop), amount 0);  
    -webkit-transition: -webkit-filter linear 1s;  
}  
  
.shader:hover{  
    -webkit-filter: custom(none  
        mix(url(shaders/grayscale.fs)  
            normal source-atop), amount 1);  
}
```

The Creative Web

id nibh elementum ornare. Aliquam sit amet tempor lectus. Nunc ornare ornare tellus, vitae gravida metus dignissim lobortis. Integer consequat elit eu augue consectetur sodales.



Morbi congue ultricies risus, quis lacreet dolor placerat vel. Mauris dignissim, diam sit amet dapibus tringilla, sem massa rhoncus mauris, non viverra nisl ipsum eu neque. Cras sollicitudin, leo et dapibus mattis, erat quam aliquam nisl, at dictum sapien sapien in libero. Pellentesque euismod pulvinar sem, sed condimentum purus consectetur eget.



The Creative Web

id nibh elementum ornare. Aliquam sit amet tempor lectus. Nunc ornare ornare tellus, vitae gravida metus dignissim lobortis. Integer consequat elit eu augue consectetur sodales.



Morbi congue ultricies risus, quis lacreet dolor placerat vel. Mauris dignissim, diam sit amet dapibus tringilla, sem massa rhoncus mauris, non viverra nisl ipsum eu neque. Cras sollicitudin, leo et dapibus mattis, erat quam aliquam nisl, at dictum sapien sapien in libero. Pellentesque euismod pulvinar sem, sed condimentum purus consectetur eget.



CSS Custom Filters - Shaders

```
precision mediump float;  
  
// Uniform values from CSS  
  
uniform float amount;  
  
// Varyings passed in from vertex shader  
  
varying vec2 v_uv;  
varying float v_height;  
varying float v_light;  
  
// Main  
  
void main()  
{  
    const float a = 1.0;  
    float r, g, b;  
  
    // Depth variant  
    /*  
    float n = 1.0 - v_height;  
    float v = mix(1.0, n, amount);  
    r = g = b = v;  
    */  
  
    // Light variant  
    float n = v_light;  
    float v = mix(1.0, n * n, amount);  
    r = g = b = sqrt(v);  
  
    // Set color matrix  
    css_ColorMatrix = mat4(r, 0.0, 0.0, 0.0,  
                          0.0, g, 0.0, 0.0,  
                          0.0, 0.0, b, 0.0,  
                          0.0, 0.0, 0.0, a);  
}
```

CSS Custom Filters - Shaders

```
precision mediump float;  
  
// Uniform values from CSS  
  
uniform float amount;  
  
// Varyings passed in from  
  
varying vec2 v_uv;  
varying float v_height;  
varying float v_light;  
  
// Main  
  
void main()  
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    const float a = 1.0;  
    float r, g, b;  
  
    // Depth variant  
    /*  
    float n = 1.0 - v_height;  
    float v = mix(1.0, n, amount);  
    r = g = b = v;  
    */  
  
    // Light variant  
    float n = v_light;  
    float v = mix(1.0, n * n, amount);  
    r = g = b = sqrt(v);  
  
    // Set color matrix  
    css_ColorMatrix = mat4(r, 0.0, 0.0, 0.0,  
                          0.0, g, 0.0, 0.0,  
                          0.0, 0.0, b, 0.0,  
                          0.0, 0.0, 0.0, a);  
}
```

Holy C-like syntax,
Batman!

CSS Regions & Filters

Demo Time!



JavaScript APIs

The Bleeding edge of...

getUserMedia & WebRTC

```
navigator.getUserMedia =  
  navigator.getUserMedia ||  
  navigator.webkit GetUserMedia ||  
  navigator.mozGetUserMedia ||  
  navigator.msGetUserMedia;  
  
var url = window.URL || window.webkitURL,  
createEl = document.createElement;  
  
function streamVideo(lStream) {  
  var video = createEl("video");  
  video.autoplay = true;  
  video.src = url.createObjectURL(lStream);  
  
  document.body.appendChild(video);  
}  
  
navigator.getUserMedia(  
  {video: true}, streamVideo, logError);
```

getUserMedia &
WebRTC

Demo Time!



WebGL

```
var camera, scene, renderer;
var geometry, material, mesh;

camera = new THREE.PerspectiveCamera(75,500,1, 10000 );
camera.position.z = 1000;

scene = new THREE.Scene();
geometry = new THREE.CubeGeometry( 200, 200, 200 );
material = new THREE.MeshBasicMaterial(
{ color: 0xff0000, wireframe: true } );

mesh = new THREE.Mesh( geometry, material );
scene.add( mesh );

renderer = new THREE.WebGLRenderer();
renderer.setSize( window.innerWidth,
                  window.innerHeight );

document.body.appendChild( renderer.domElement );
```

WebGL

Demo Time!



JavaScript Speech API

```
var recognition = new SpeechRecognition();
recognition.maxAlternatives = 5;

recognition.onresult = function(event) {
    // SpeechRecognitionEvent
    if (event.result.length > 0) {
        // SpeechRecognitionResult
        var q = document.querySelector('#query');

        // SpeechRecognitionAlternative
        q.value = event.result[0].transcript;
    }
};

var button = document.querySelector('#s');
button.onclick = function() {
    recognition.start();
};
```

JavaScript Speech API

Demo Time!



HTML & the DOM

The Bleeding edge of...



RESPONSIVE IMAGES COMMUNITY GROUP

Hixie vs. THE WORLD

(a.k.a. `srcset` vs. `<picture>`)

or

(a tale of two specifications)

or

(much ado about media)

<http://responsiveimages.org/>

<http://picture.responsiveimages.org/>

<http://dev.w3.org/html5/srcset/>

Responsive Images <picture>

```
<!-- picture-element -->
<picture>
  <source media="(max-width: 479px)"
         src="test_landscape_1@1x.jpg">
  <source
    media="(min-width: 480px) and (max-width: 639px)"
    src="test_landscape_1@2x.jpg">
  <source media="(min-width: 640px)"
    src="test_landscape_1@4x.jpg">
  <source media="monochrome"
    src="test_landscape_1@monochrome.jpg">

  <!-- fallback img if picture is not supported -->
  

  <!-- providing alternate text -->
  <p>Nymphenburg Castle in Munich during sunset</p>
</picture>
```

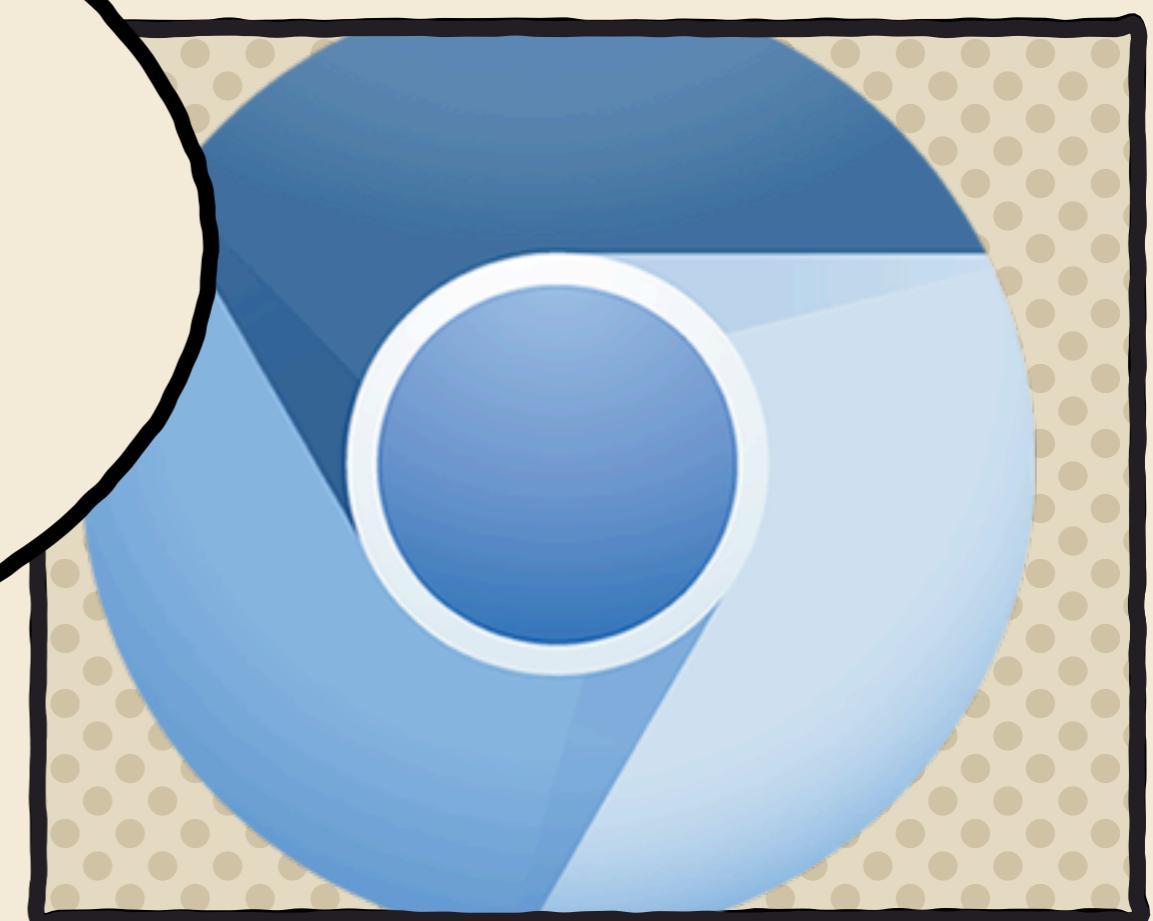
“Responsive Images “srcset”

```
<h1>
  
</h1>

<figure>
  
  <figcaption>Awesome Pear</figcaption>
</figure>
```

Responsive Images

Demo Time!



Custom Elements / x-tags
Templates
Decorators
Shadow DOM

Web Components

or
("Subverting the W3C, one x-tag at a time")

webcomponents.github.com/



WEB COMPONENTS

Templates

```
<template id="cmmTmpl">
  <div>
    <img src="">
    <div class="comment"></div>
    ...
  </div>
</template>

var t = document.querySelector("#cmmTmpl");
// Populate the template.
// ...
// Add Node to DOM
someElement.appendChild(
  t.content.cloneNode()));
```

Custom Elements

```
<element extends="button" name="x-fancybutton">
  <template>
    <style scoped>
      :host { display: contents; }
      div.fancy {
        ...
      }
    </style>
    <div class="fancy">
      <content></content>
      <div id="t"></div>
      <div id="l"></div>
      <div id="b"></div>
      <div id="r"></div>
    </div>
  </template>
</element>

<button is="x-fancybutton" onclick="showTime();">
  Show Time
</button>
```

CSS Decorators

```
<decorator id="fade-to-white">
  <template>
    <div style="position: relative;">
      <style scoped>
        #fog {
          position: absolute;
          background: rgba(255, 255, 255, 0);
        }
      </style>
      <content></content>
      <div id="fog"></div>
    </div>
  </template>
</decorator>

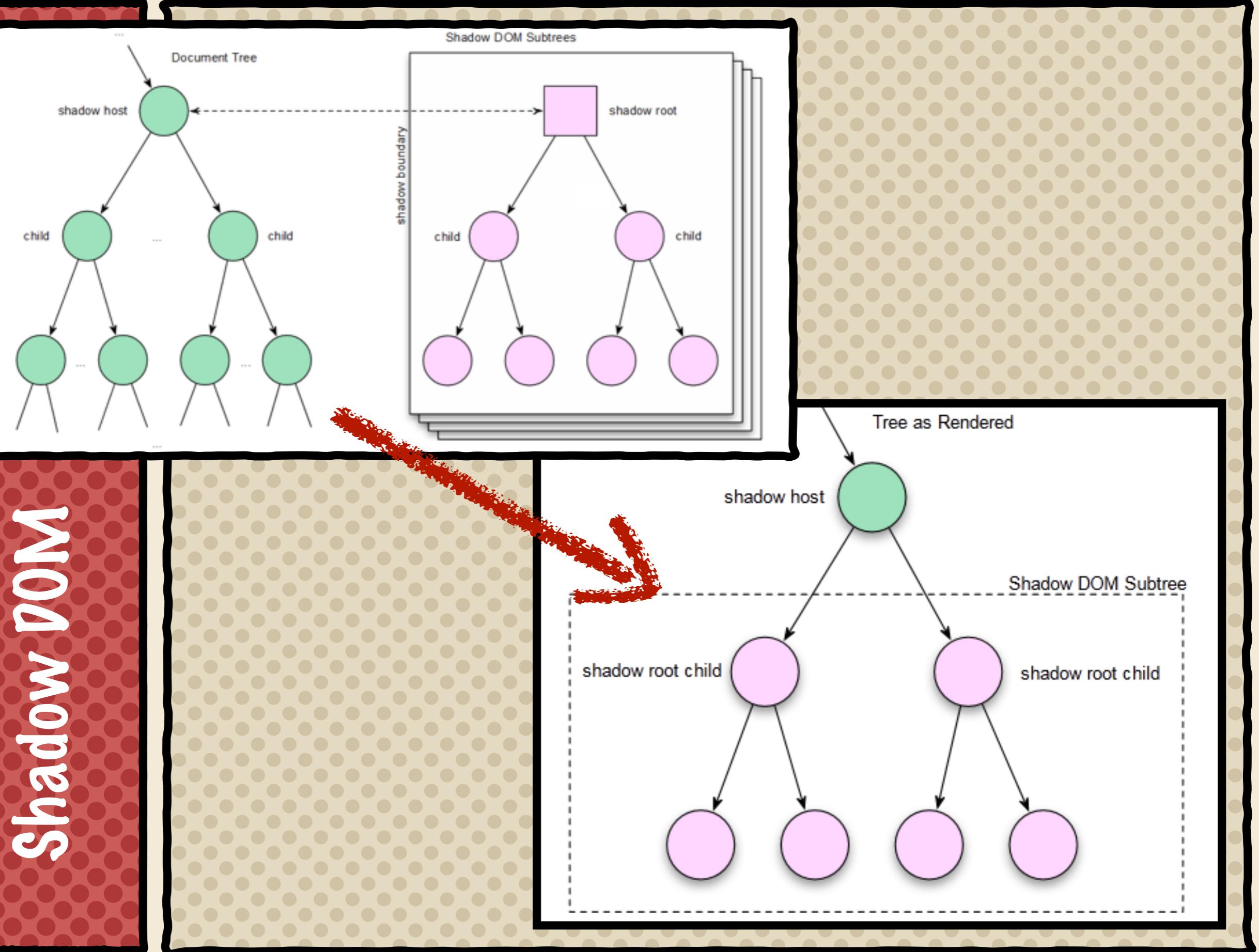
<div class="poem">
  Two roads diverged in a yellow wood,<br>
</div>

.poem {
  decorator: url(#fade-to-white);
  font-variant: small-caps;
}
```

Shadow DOM

```
<div>
  <content select="h1.cool">
    <!-- all h1.cool children here -->
  </content>
  <div class="cool">
    <content select=".cool">
      <!-- all .cool children
          (except h1.cool) appear here -->
    </content>
  </div>
  <div class="stuff">
    <content>
      <!-- remaining children will appear here -->
    </content>
  </div>
</div>

<div>
  <shadow>
    <!-- range slider renders here -->
  </shadow>
  <div class="ticks"> ... </div>
</div>
```



Shadow DOM

Demo Time!





We're only getting started...



... like Mozilla's WebAPI Initiative

- * WebTelephony
- * WebSMS
- * Contacts API
- * Battery Status
- * WebNFC
- * WebPayment
- * WebFM

arewemobileyet.com

Firefox OS

Demo Time!

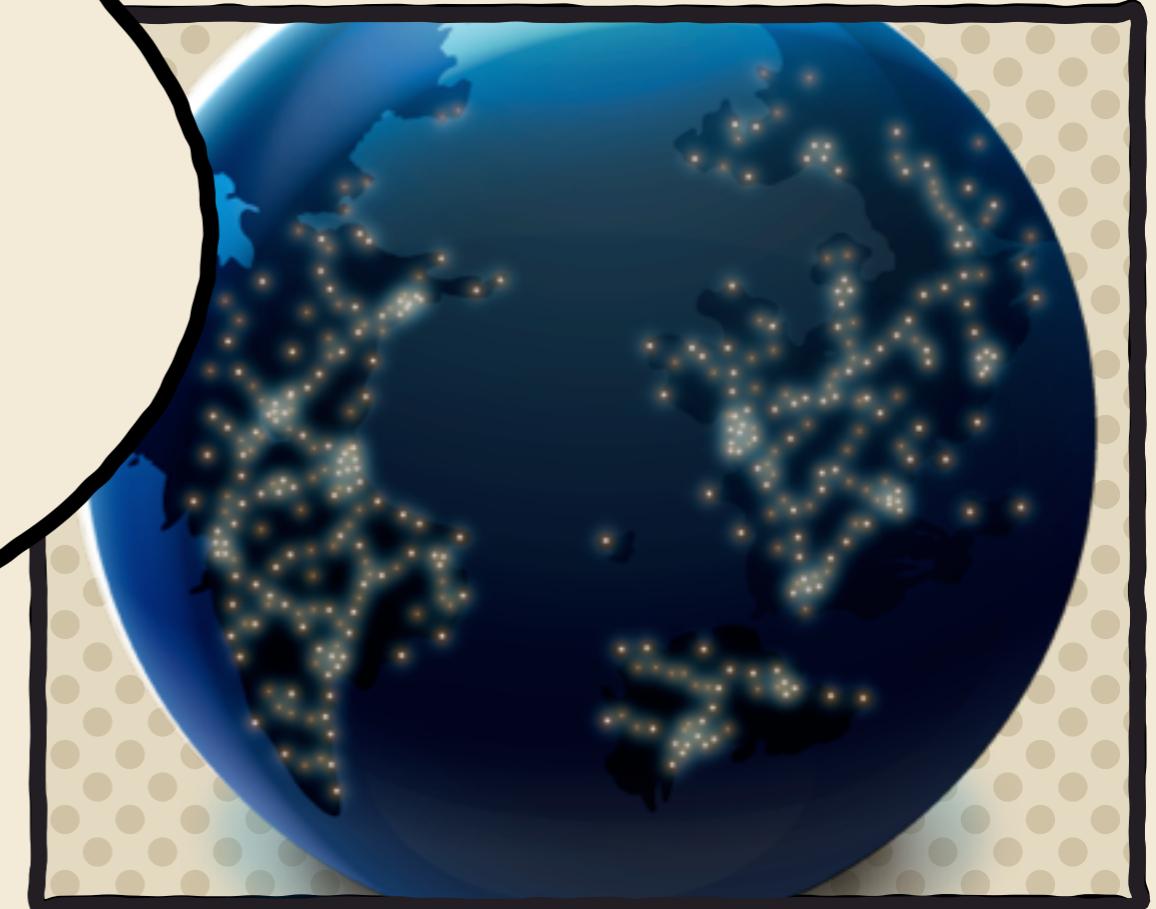




Image by "dbking" From <http://www.flickr.com/photos/65193799@N00/185094394/>

So, what does it all mean?

Questions?



Image From <http://www.freepixels.com/index.php?action=showpic&cat=22&pic=1223>

Slides - bit.ly/bleeding-html5
Demos - github.com/bsatröm/bleeding-html5

