Nano? Pico? Femto? Atto?

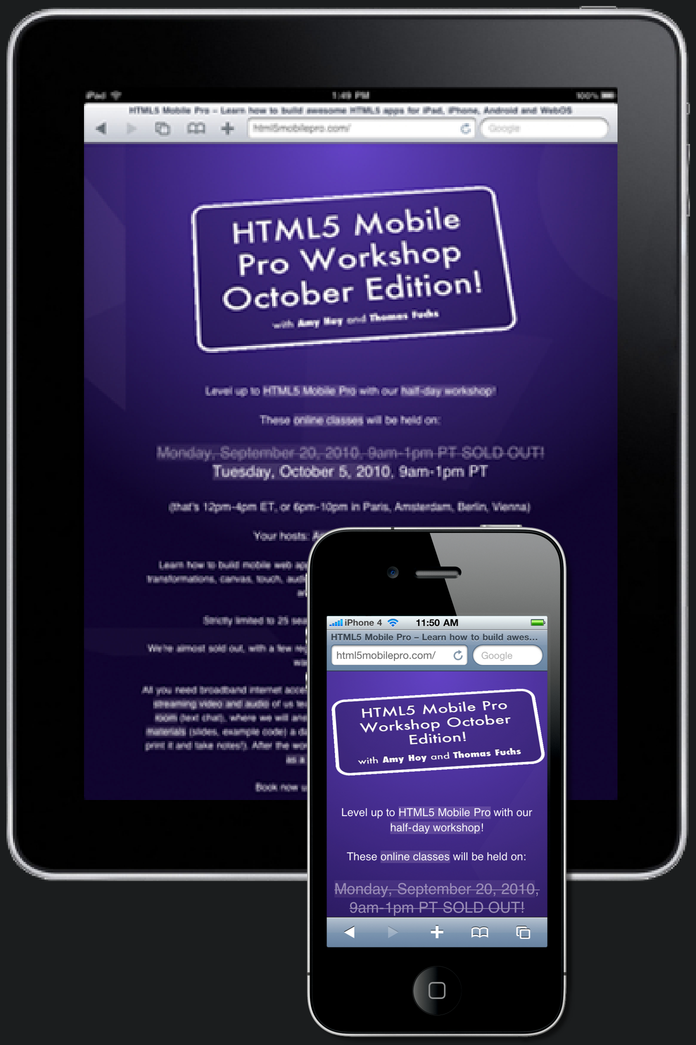
Zepto!

@thomasfuchs

(cc) 2011 Thomas Fuchs

“real” computer

- ✓ Fast and stable network connection
- ✓ Lots of storage
- ✓ Fast, multi-core CPUs
- ✓ Hardware-accelerated graphics



iPad 1:49 PM 100%

HTML5 Mobile Pro – Learn how to build awesome HTML5 apps for iPad, iPhone, Android and WebOS

html5mobilepro.com/

Google

HTML5 Mobile Pro Workshop October Edition!

with Amy Hoy and Thomas Fuchs

Level up to HTML5 Mobile Pro with our half-day workshop!

These online classes will be held on:

~~Monday, September 20, 2010, 9am-1pm PT SOLD OUT!~~
Tuesday, October 5, 2010, 9am-1pm PT

(that's 12pm-4pm ET, or 6pm-10pm in Paris, Amsterdam, Berlin, Vienna)

Your hosts: A

Learn how to build mobile web ap
transformations, canvas, touch, aud
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Strictly limited to 25 sea

We're almost sold out, with a few re
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Book now u

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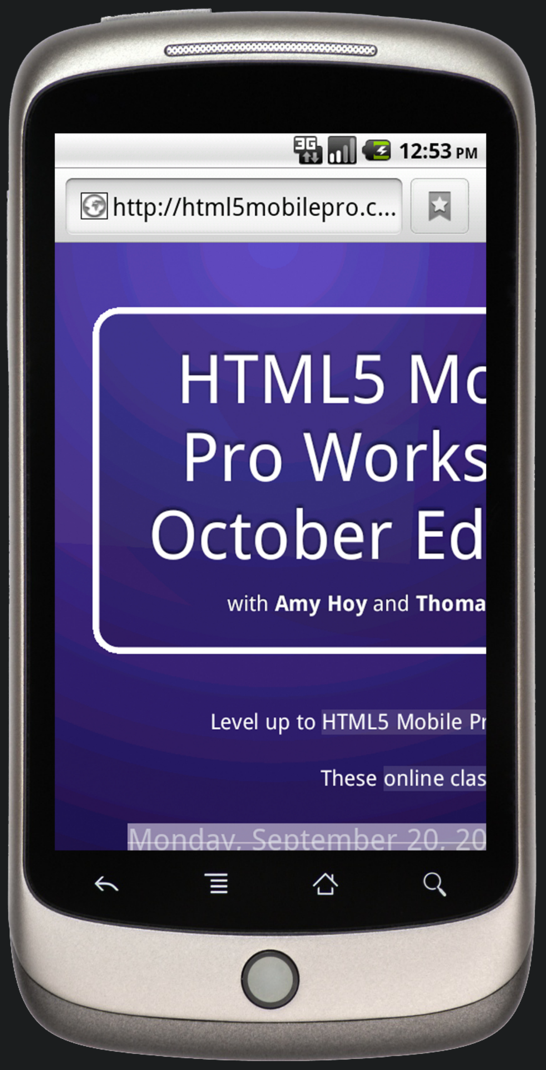

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http://html5mobilepro.c...

HTML5 Mo
Pro Works
October Ed

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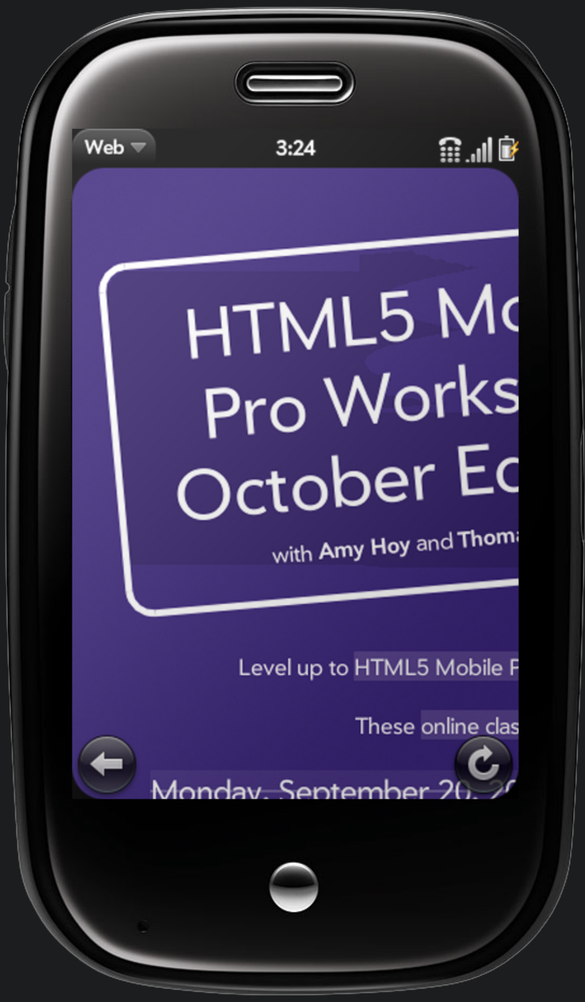
Monday, September 20, 20



Web 3:24

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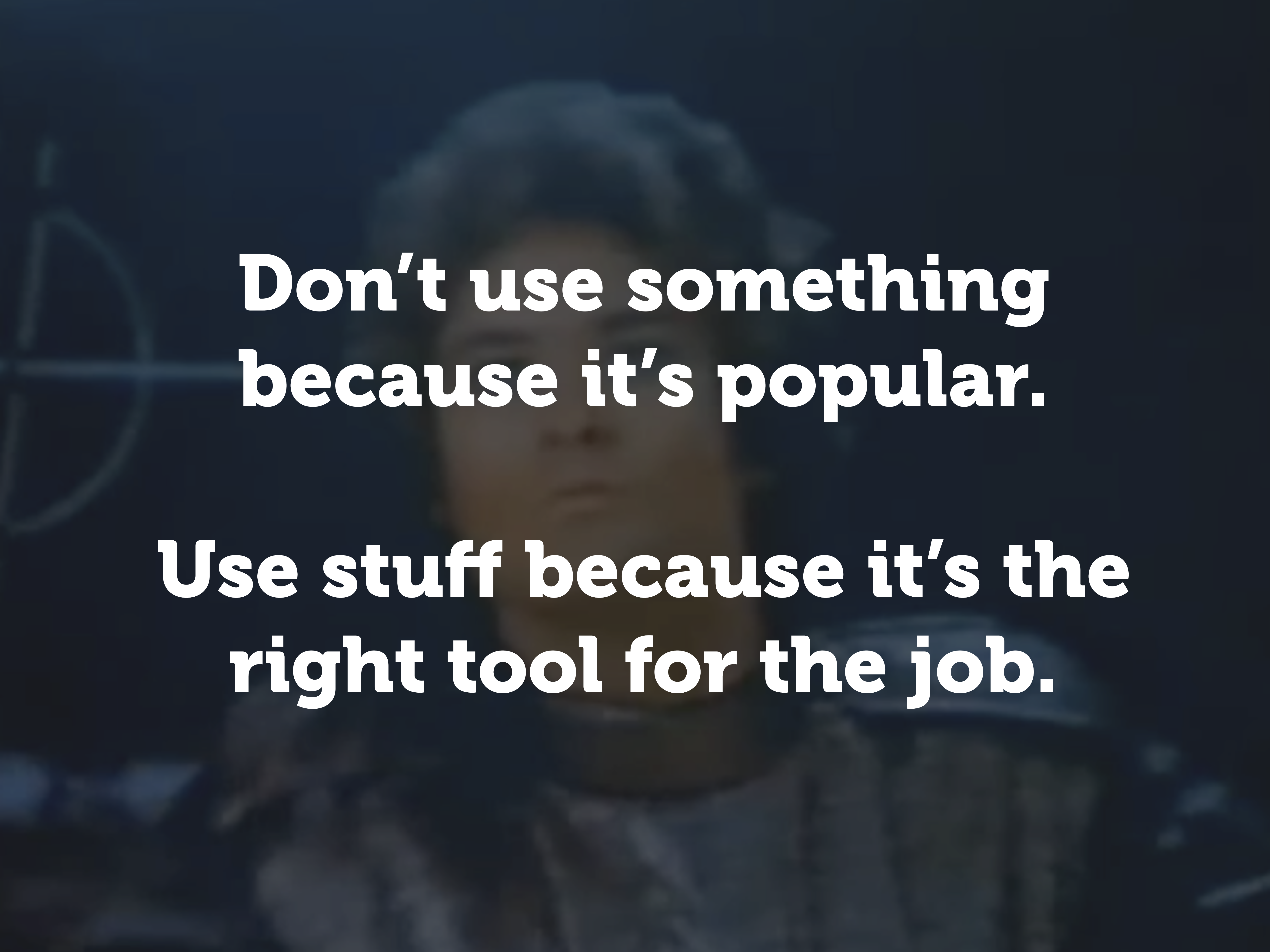
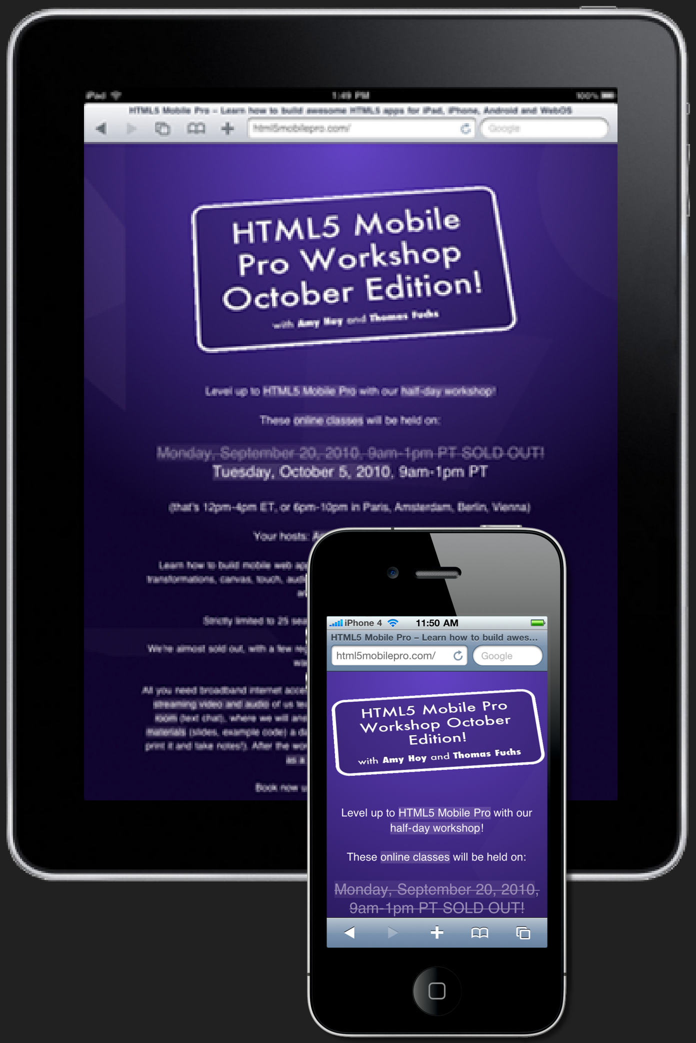
- ⚠ Slow & unstable network connection
- ⚠ Limited storage
- ⚠ Slow CPUs
- ⚠ Hardware acceleration only on iOS

All major JS libs where created before phones had web browsers to write home about.



Don’t use something because it’s popular.

Use stuff because it’s the right tool for the job.



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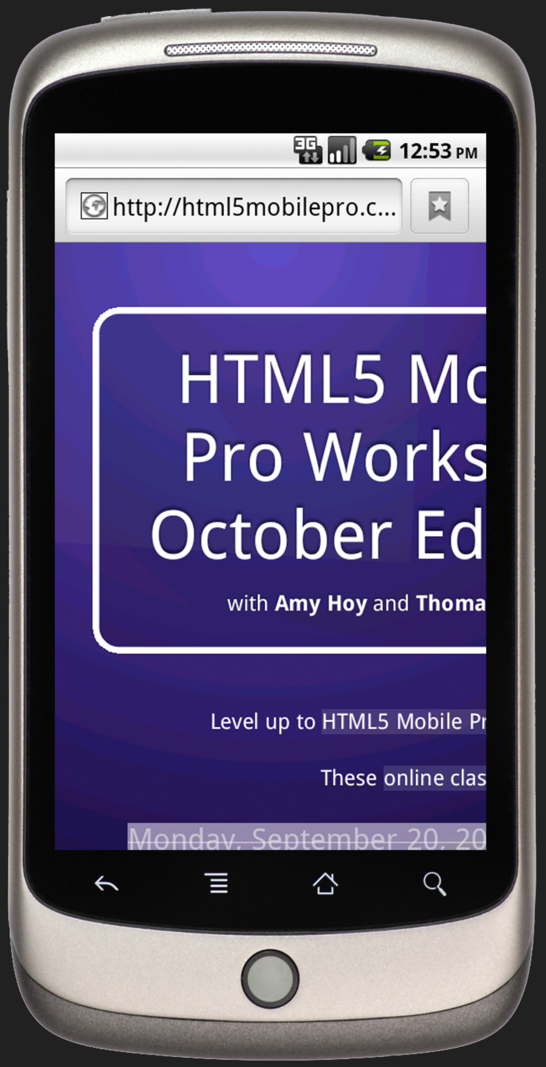

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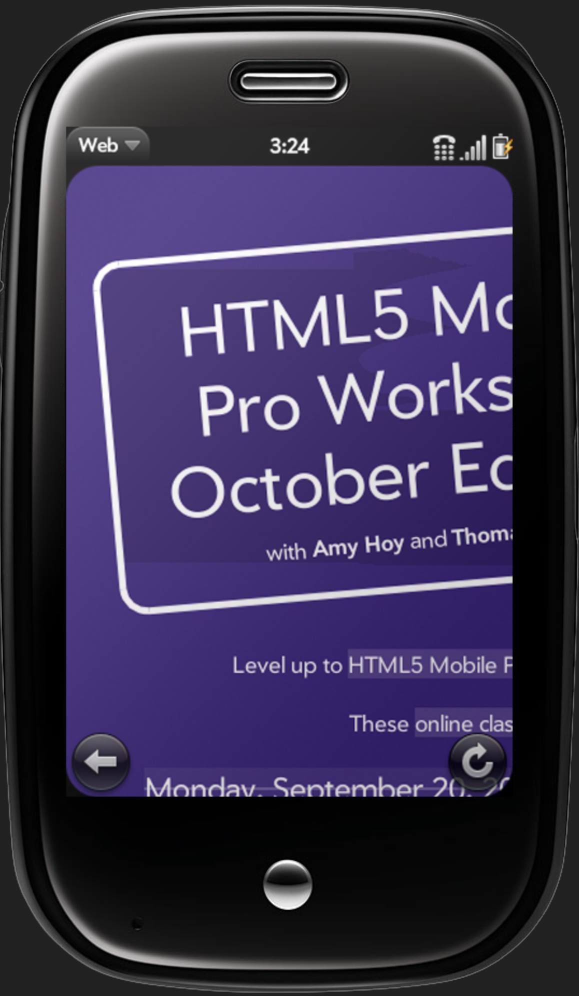

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WebKit

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W

Proprietary features

Adoption of features from JavaScript frameworks

Proprietary features are awesome

CSS Selectors

```
document.querySelectorAll('div.awesome > p')
```

full featured
CSS3 selectors

```
// select all li elements with both "just" and "testing"
classnames
document.querySelectorAll('li.just.testing')

// how many paragraphs?
document.querySelectorAll('p').length

// select even paragraphs
document.querySelectorAll('p:nth-child(2n+1)')
```

```
[].slice.apply(nodelist)
```

convert to
JavaScript array

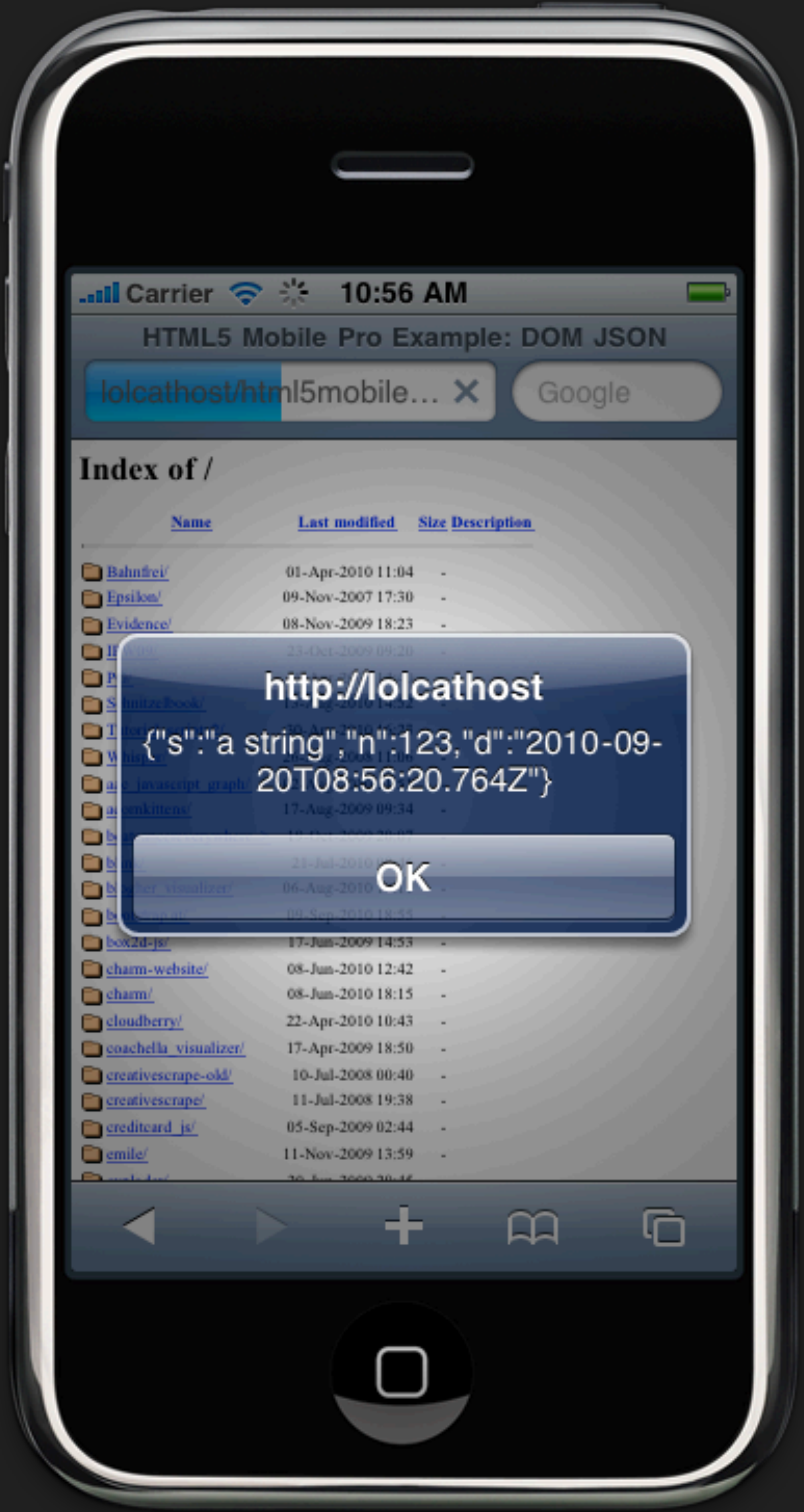
⚠ **document.querySelectorAll returns a NodeList, not an array**

querySelectorAll

- ✓ Full-featured CSS selectors
- ✓ No need for external JavaScript libraries
- ✓ Fast, native implementation
- ⚠ Returns a NodeList, not an array

JSON

```
JSON.stringify({
  s: 'a string',
  n: 123,
  d: new Date
})
```



Index of /

Name	Last modified	Size	Description
Bahnfrei/	01-Apr-2010 11:04	-	
Epsilon/	09-Nov-2007 17:30	-	
Evidence/	08-Nov-2009 18:23	-	
box2d-js/	17-Jun-2009 14:53	-	
charm-website/	08-Jun-2010 12:42	-	
charm/	08-Jun-2010 18:15	-	
cloudberry/	22-Apr-2010 10:43	-	
coachella_visualizer/	17-Apr-2009 18:50	-	
creativescrape-old/	10-Jul-2008 00:40	-	
creativescrape/	11-Jul-2008 19:38	-	
creditcard_js/	05-Sep-2009 02:44	-	
emile/	11-Nov-2009 13:59	-	

http://lolcathost

{"s":"a string","n":123,"d":"2010-09-20T08:56:20.764Z"}

```
JSON.parse('{"some":"json","test":123}')
```

Native JSON

- ✓ Parsing JSON (convert to JS object)
- ✓ Serializing JS objects to JSON
- ✓ Fast, native implementation
- ✓ No problem with security of "eval" as in some JavaScript-based implementations

Array iteration

```
[1,2,3].forEach(alert);
```

```
[1,2,3].forEach(alert);
```

array with three numbers

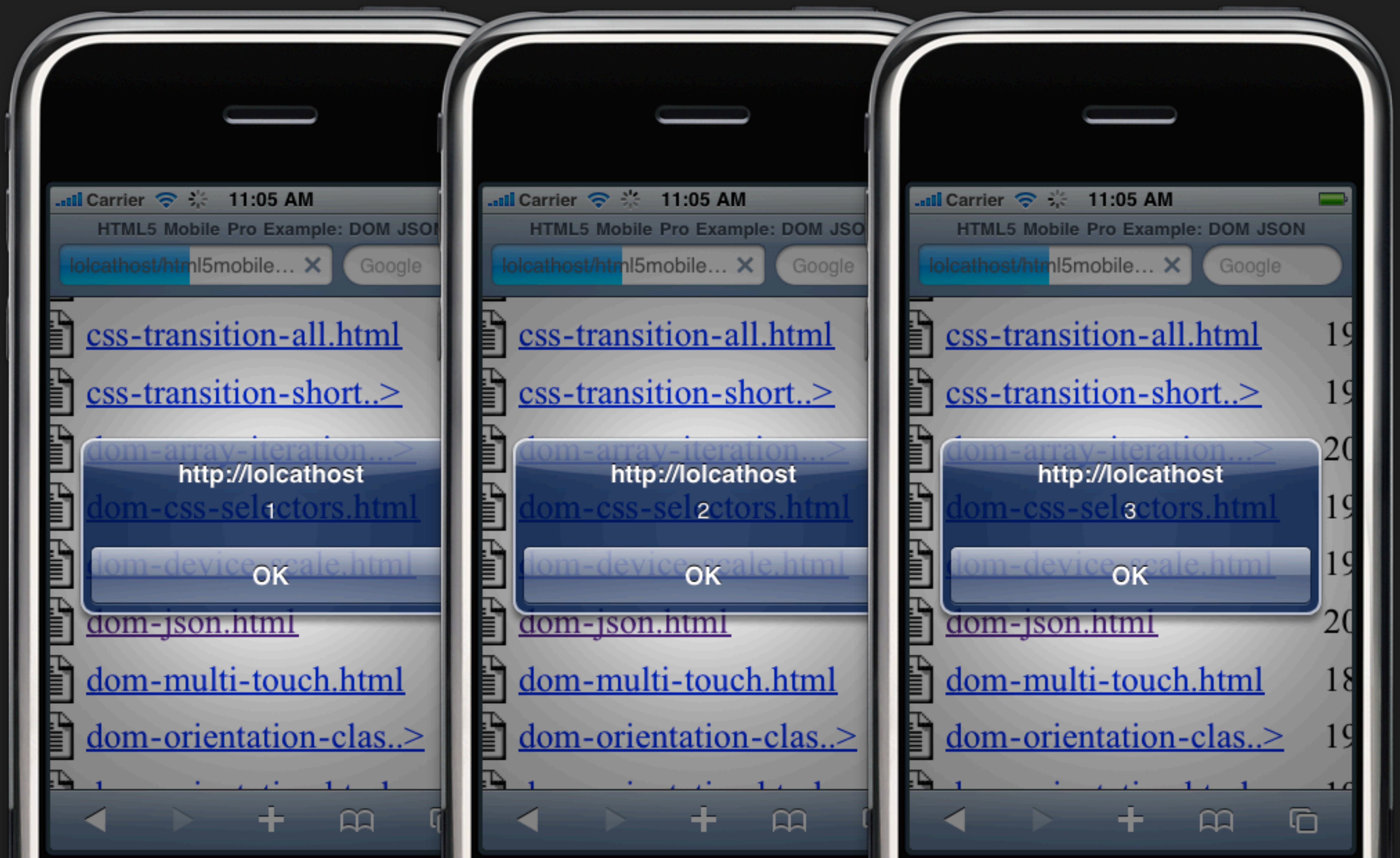
```
[1,2,3].forEach(alert);
```

forEach is a native function on arrays, taking a function argument

```
[1,2,3].forEach(alert);
```

call with `window.alert` function

```
[1,2,3].forEach(alert);
```



http://lolcathost

1

OK

http://lolcathost

2

OK

http://lolcathost

3

OK

```
[].slice.apply(nodelist).forEach(
  function(element){
    alert(element.innerHTML);
  }
);
```

Iterate through all elements found, alerting the element’s contents

Array Iteration

Array Iteration

✓ No more for loops required

Array Iteration

- ✓ No more for loops required

- ✓ No more for loops required

Array Iteration

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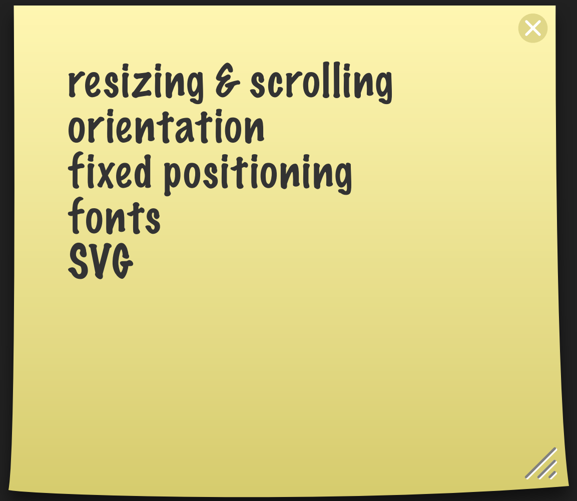
Mobile JavaScript framework?

Why not use Prototype, jQuery or other frameworks?

Some functionality is not supported or not meaningful on mobile devices.



resizing & scrolling
orientation
fixed positioning
fonts
SVG

More code causes longer download and initialization times.

Most of the downloaded code
isn’t even used.

(there’s no IE 6 to support on
mobile phones, lucky us)

A lot of the rest of the code is duplicating features that are directly available as native implementations.

Goals for a mobile JavaScript framework

Reduce code size as much as possible to keep download and initialization times down.

Easy to use API—possibly emulating jQuery because developers already know it.

Easy to extend and customize—again, jQuery has a familiar plugin/extension mechanism

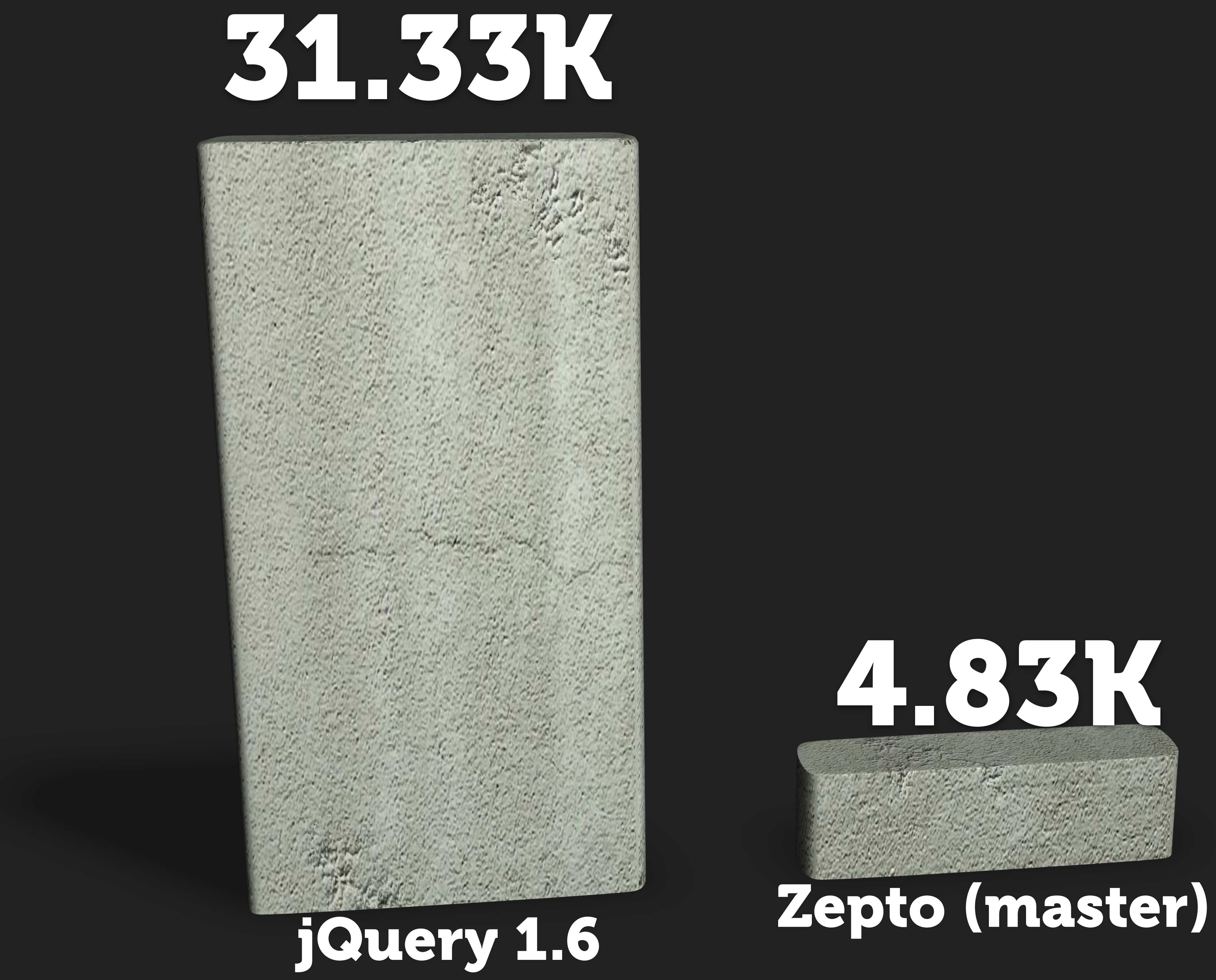
Ideally, have a fallback mechanism in case it’s run on non-WebKit mobile browsers.

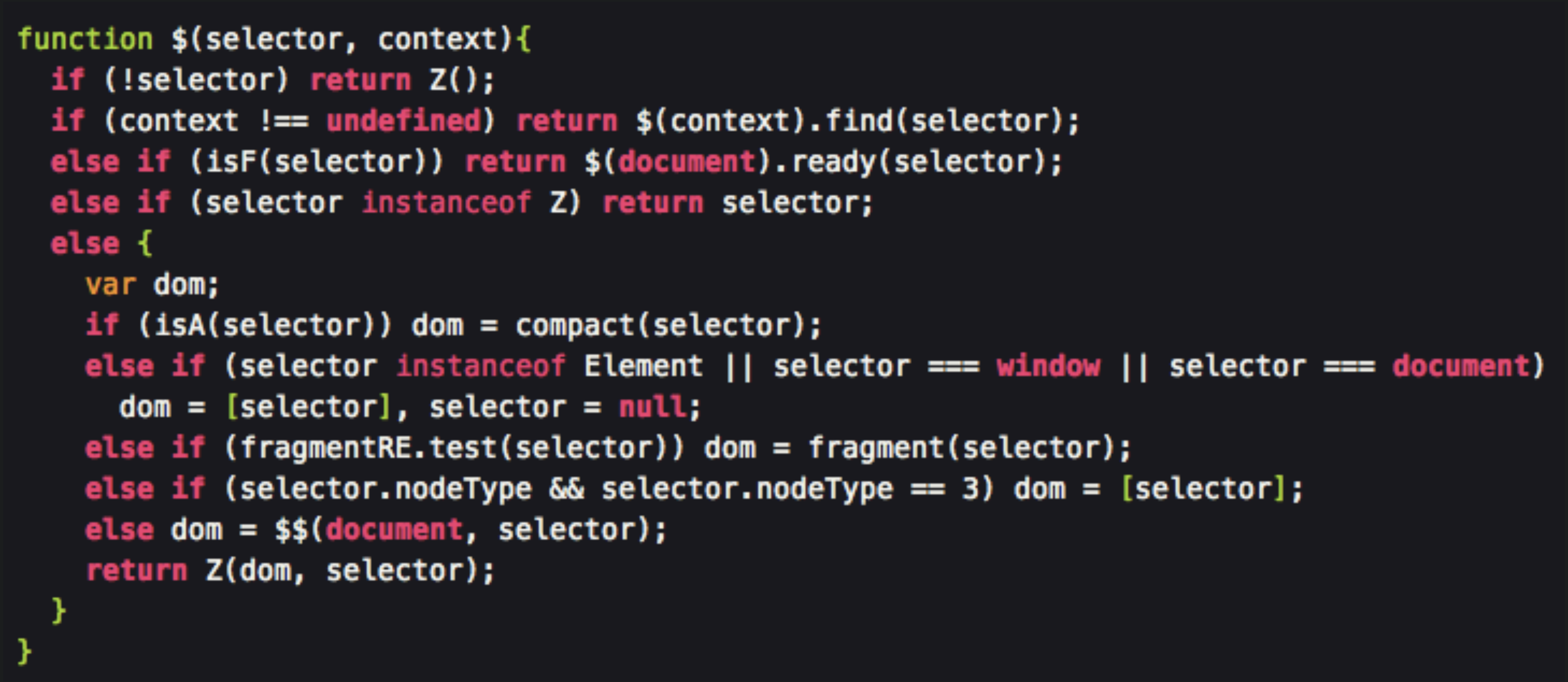
It’s not so important
what’s there, but
what’s not there.

Meet zepto.js

http://github.com/madrobby/zepto

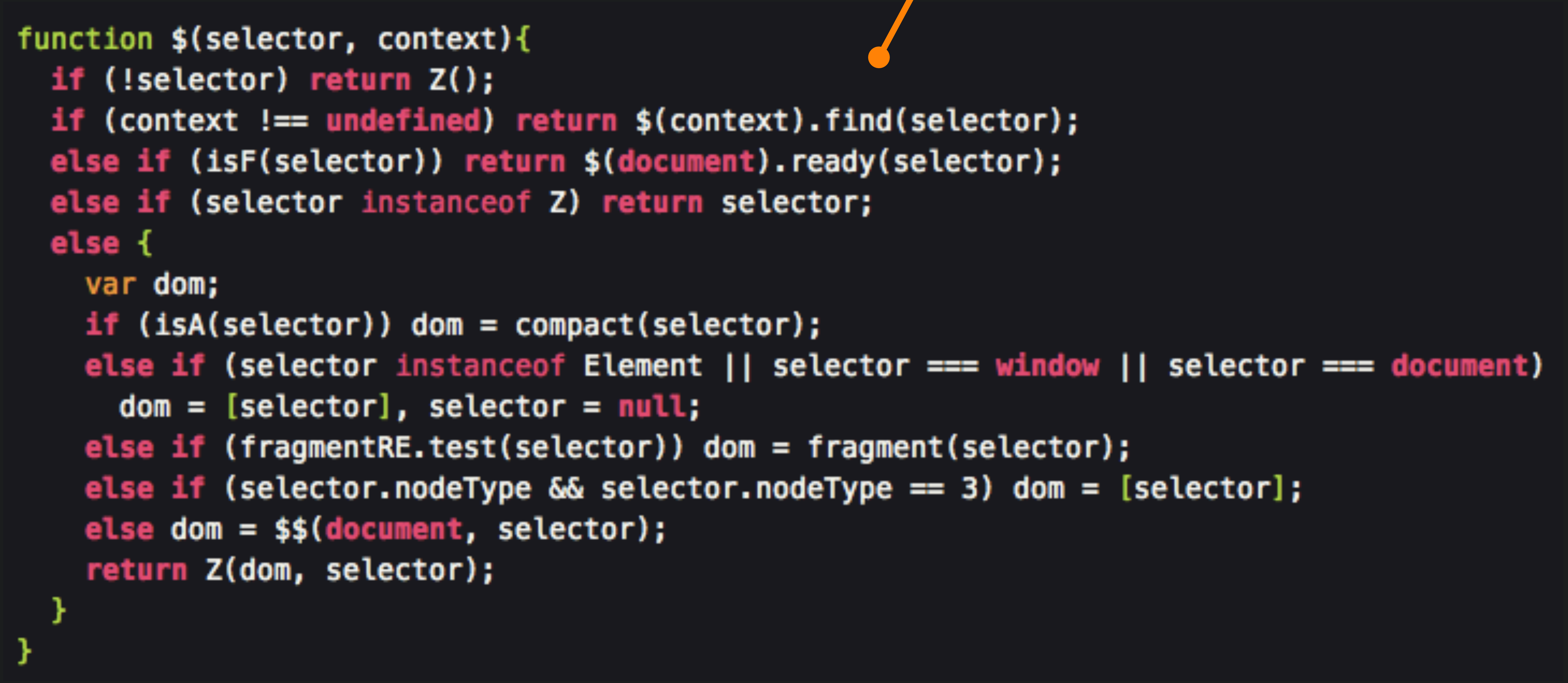
- ✓ Target size: 5K
- ✓ jQuery-compatible API
- ✓ Uses mobile WebKit features whenever possible
- ✓ Easily replaceable with jQuery proper if needed
- ⚠ Doesn’t cover all of jQuery (but lots of it!)


31.33K
jQuery 1.6
4.83K
Zepto (master)



```
function $(selector, context){
  if (!selector) return Z();
  if (context !== undefined) return $(context).find(selector);
  else if (isF(selector)) return $(document).ready(selector);
  else if (selector instanceof Z) return selector;
  else {
    var dom;
    if (isA(selector)) dom = compact(selector);
    else if (selector instanceof Element || selector === window || selector === document)
      dom = [selector], selector = null;
    else if (fragmentRE.test(selector)) dom = fragment(selector);
    else if (selector.nodeType && selector.nodeType == 3) dom = [selector];
    else dom = $$(document, selector);
    return Z(dom, selector);
  }
}
```

Various special cases



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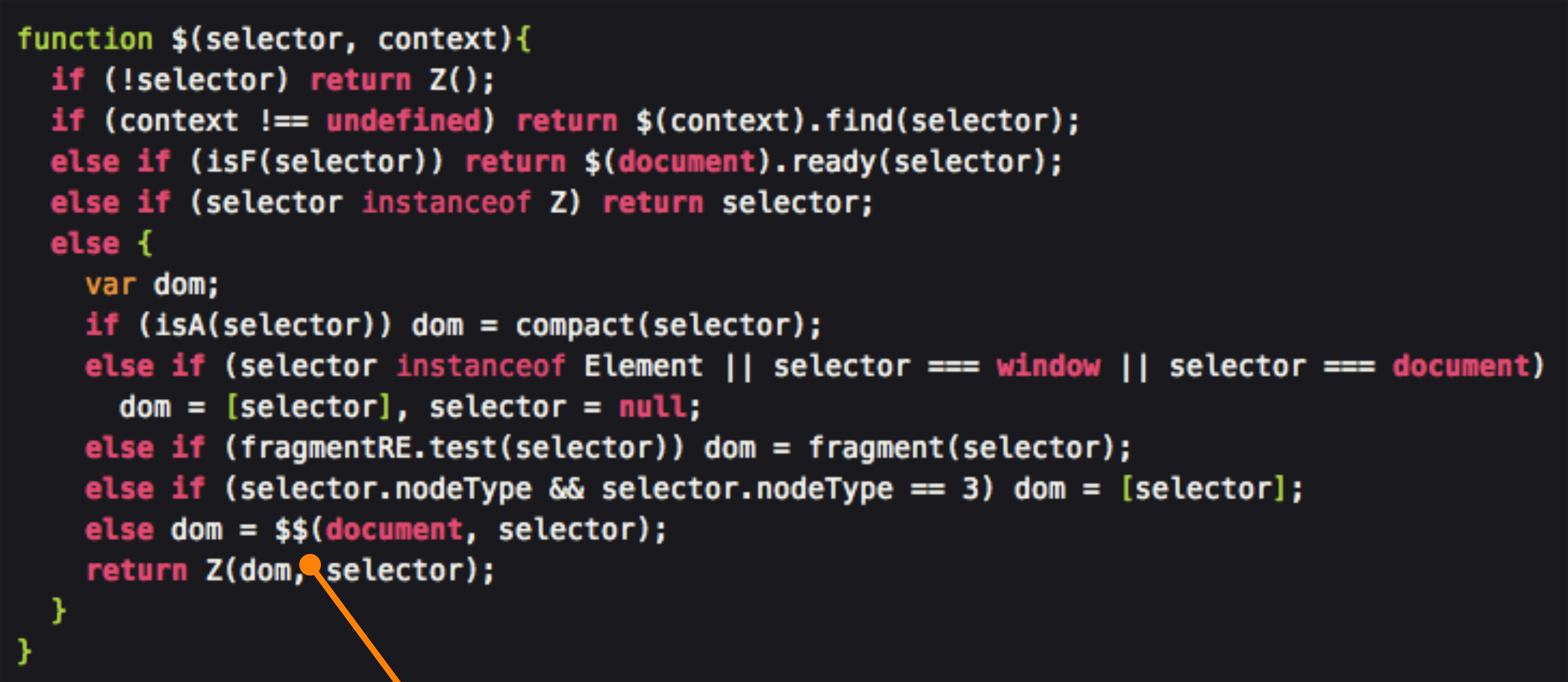
    else if (selector.nodeType && selector.nodeType == 3) dom = [selector];
    else dom = $$(document, selector);
    return Z(dom, selector);
  }
}
```



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    else if (selector.nodeType && selector.nodeType == 3) dom = [selector];
    else dom = $$(document, selector);
    return Z(dom, selector);
  }
}
```
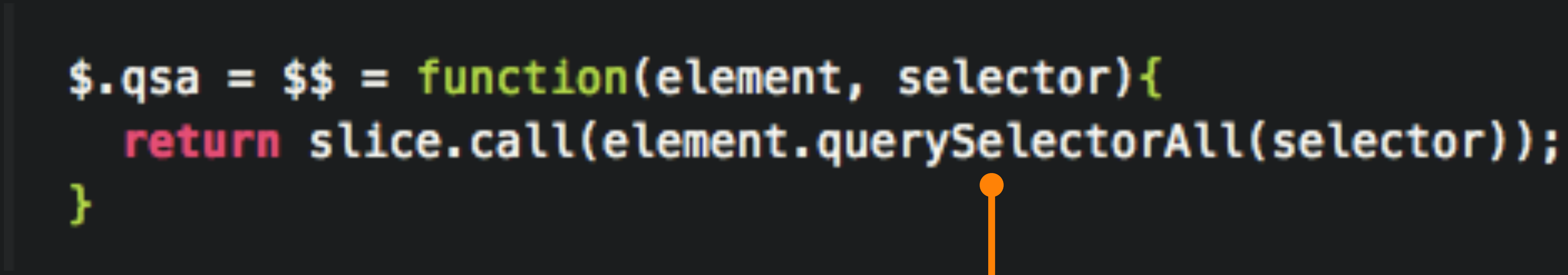
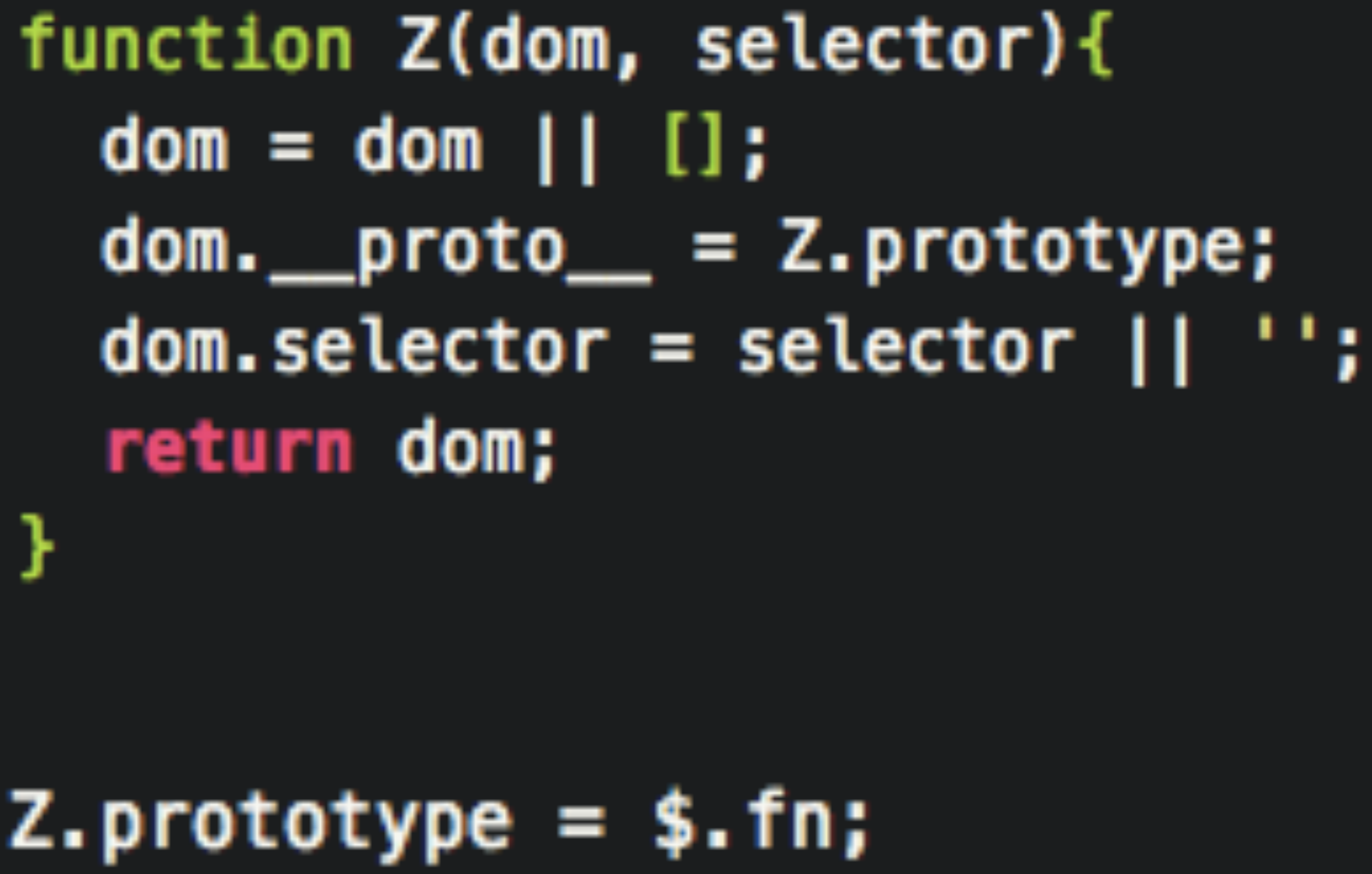

Main use case `$(some selector)`



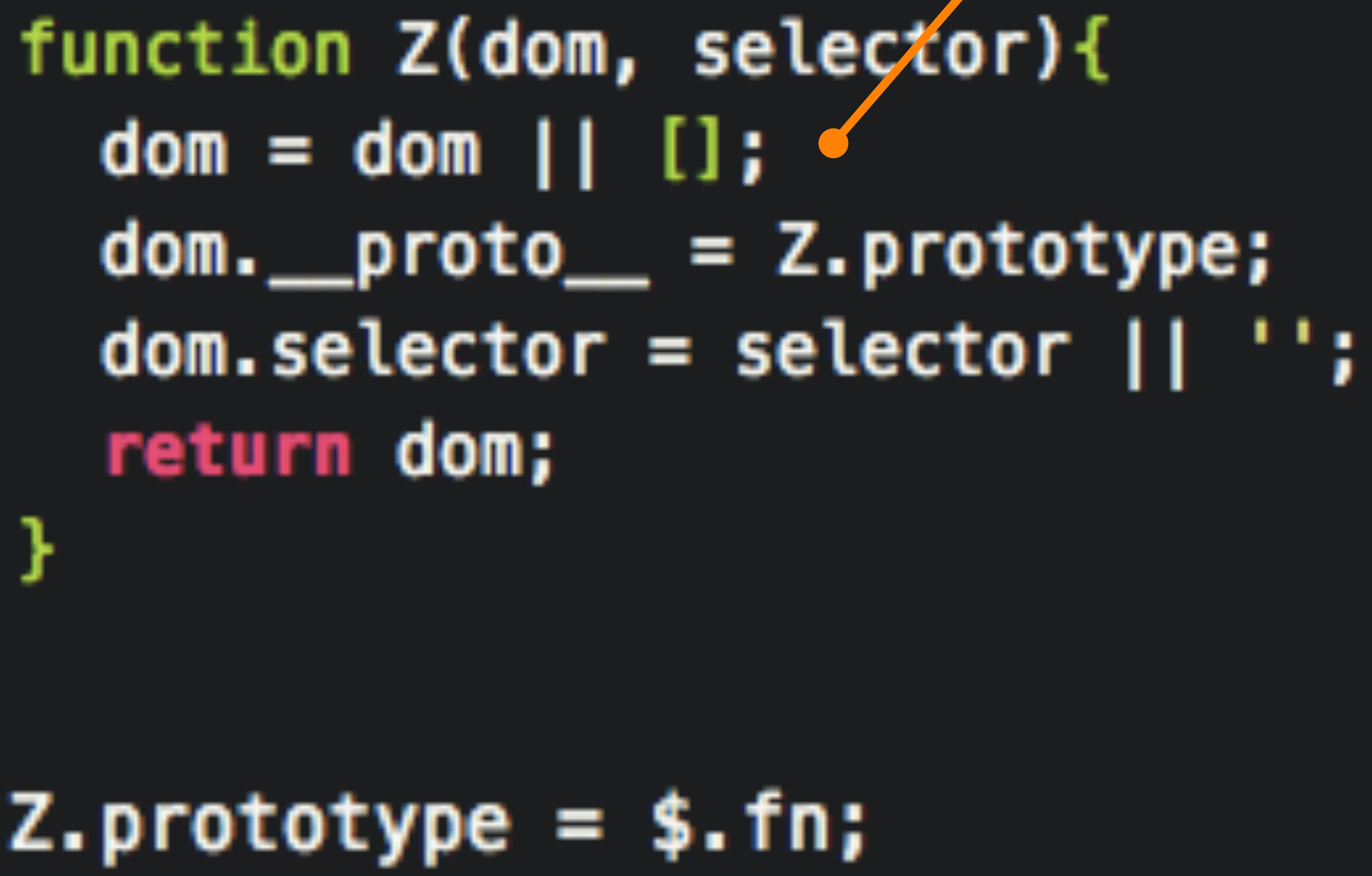
```
$.qsa = $$ = function(element, selector){
  return slice.call(element.querySelectorAll(selector));
}
```

this saves ~6k of selector engine code



```
function Z(dom, selector){
  dom = dom || [];
  dom.__proto__ = Z.prototype;
  dom.selector = selector || '';
  return dom;
}


Z.prototype = $.fn;
```

make sure dom is a JavaScript array



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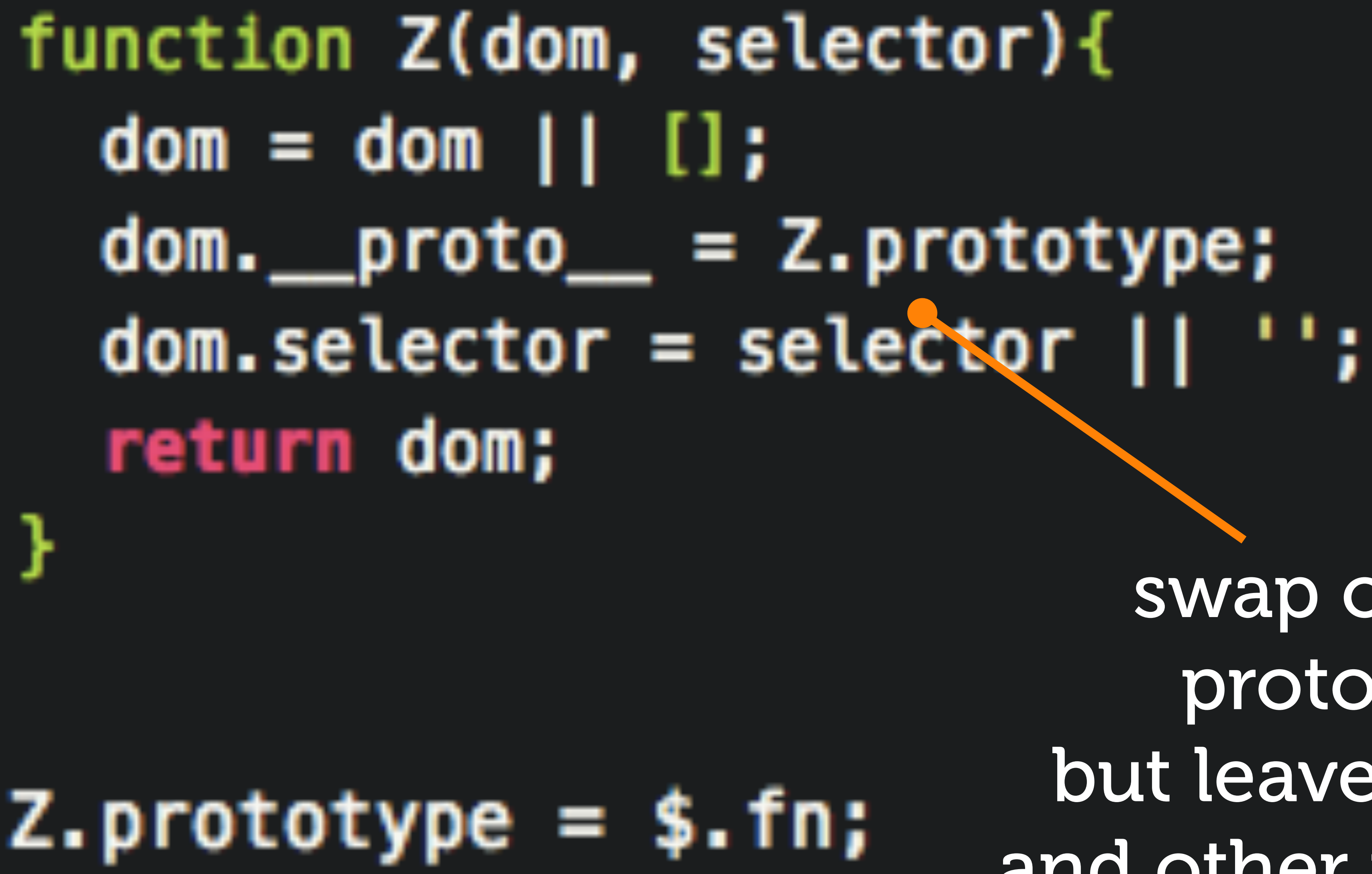
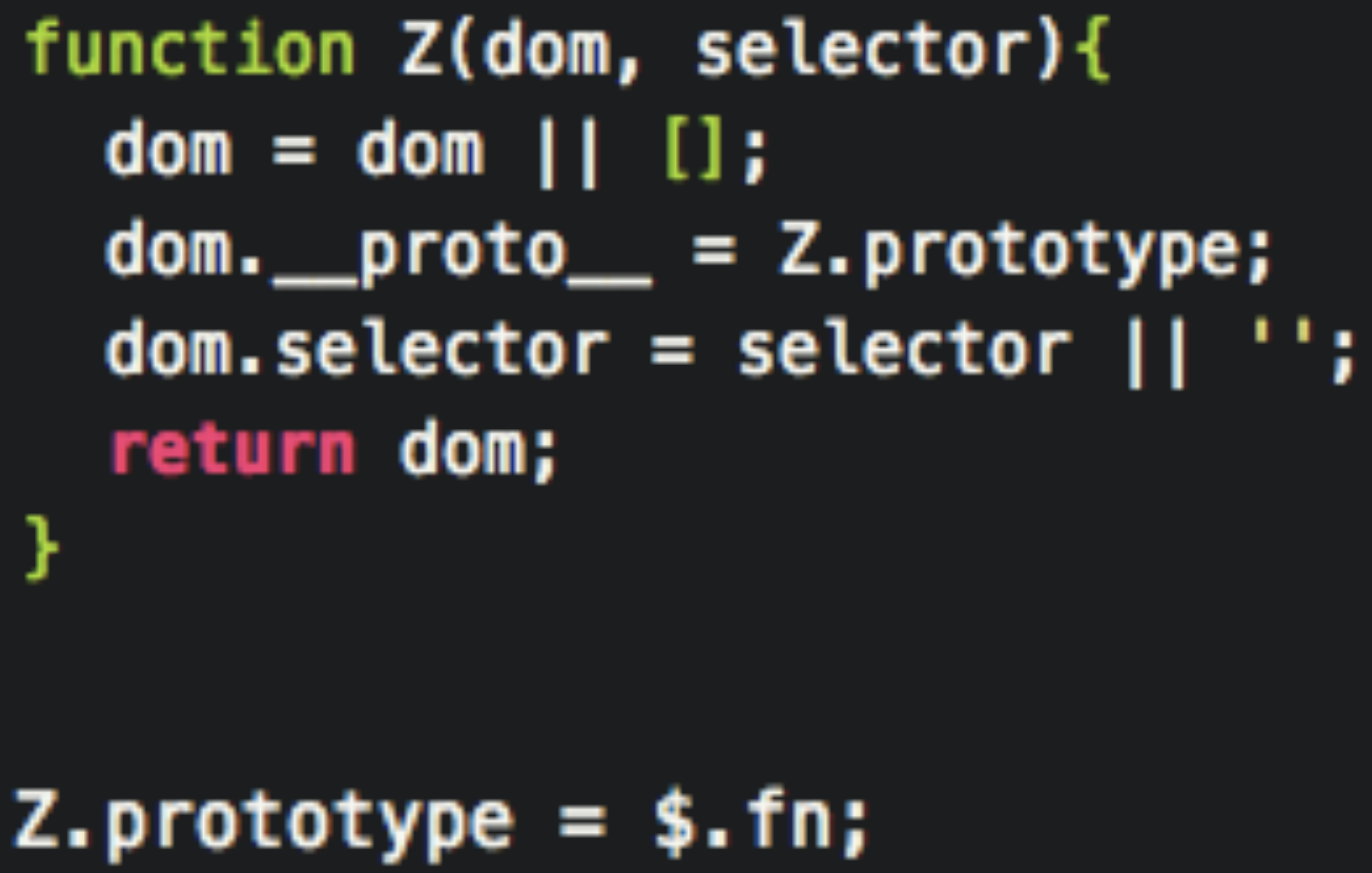


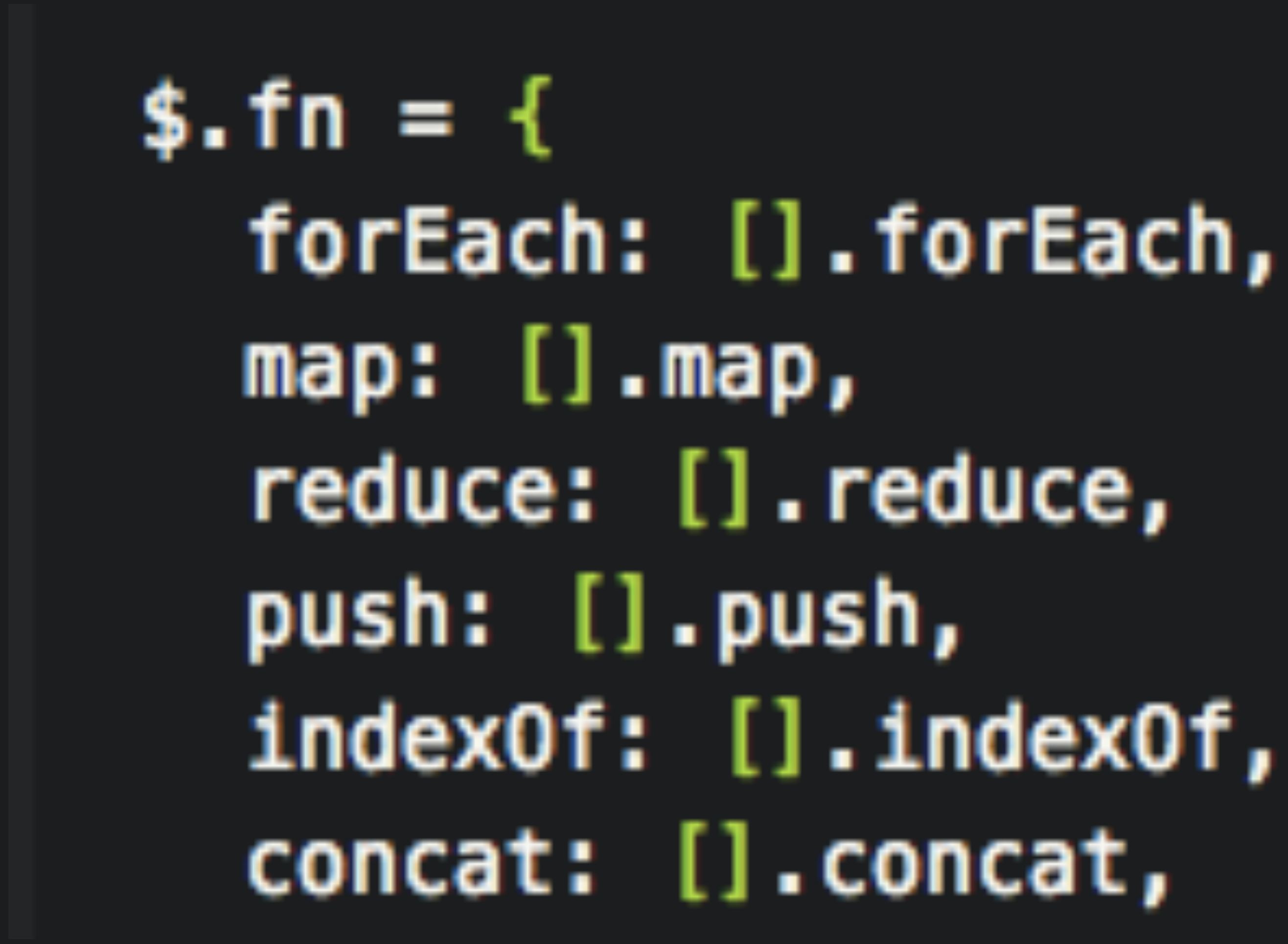
```
function Z(dom, selector){
  dom = dom || [];
  dom.__proto__ = Z.prototype;
  dom.selector = selector || '';
  return dom;
}


Z.prototype = $.fn;
```

swap out the
prototype,
but leave “length”
and other properties
intact, uses the
proprietary
__proto__ property



```
function Z(dom, selector){
  dom = dom || [];
  dom.__proto__ = Z.prototype;
  dom.selector = selector || '';
  return dom;
}


Z.prototype = $.fn;
```

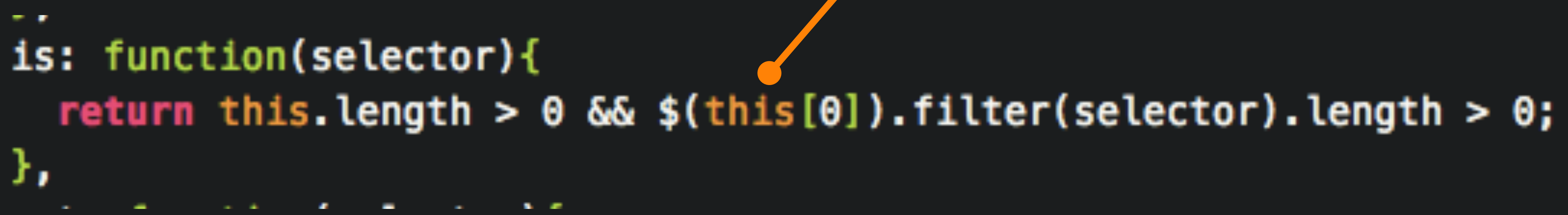
Z.prototype is pointing to $.fn which holds all methods that are used on found elements



```
$.fn = {
  forEach: [].forEach,
  map: [].map,
  reduce: [].reduce,
  push: [].push,
  indexOf: [].indexOf,
  concat: [].concat,
```

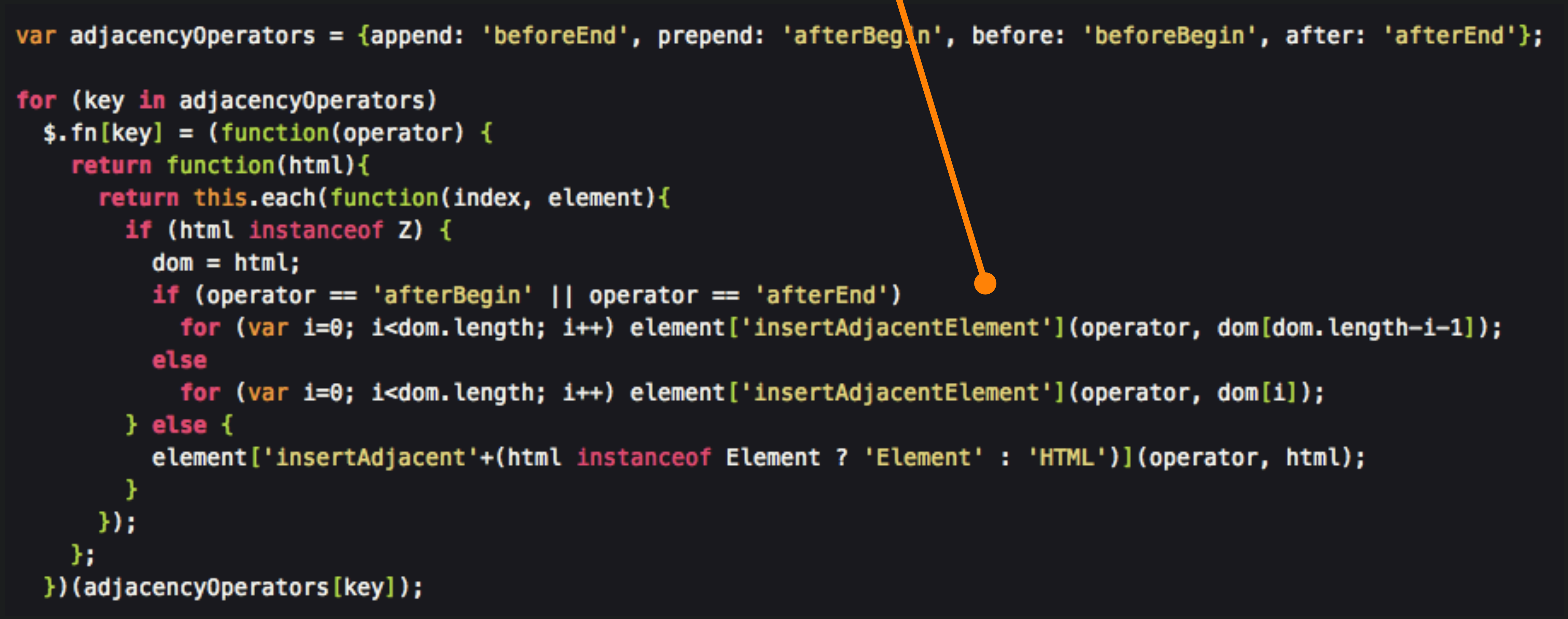
Reusing array methods, works because
we have an array-like object

`this` is an array-like of resulting nodes and a Zepto object at the same time



```
is: function(selector){
  return this.length > 0 && $(this[0]).filter(selector).length > 0;
},
```

`insertAdjacentElement` is IE-proprietary, but supported by WebKit



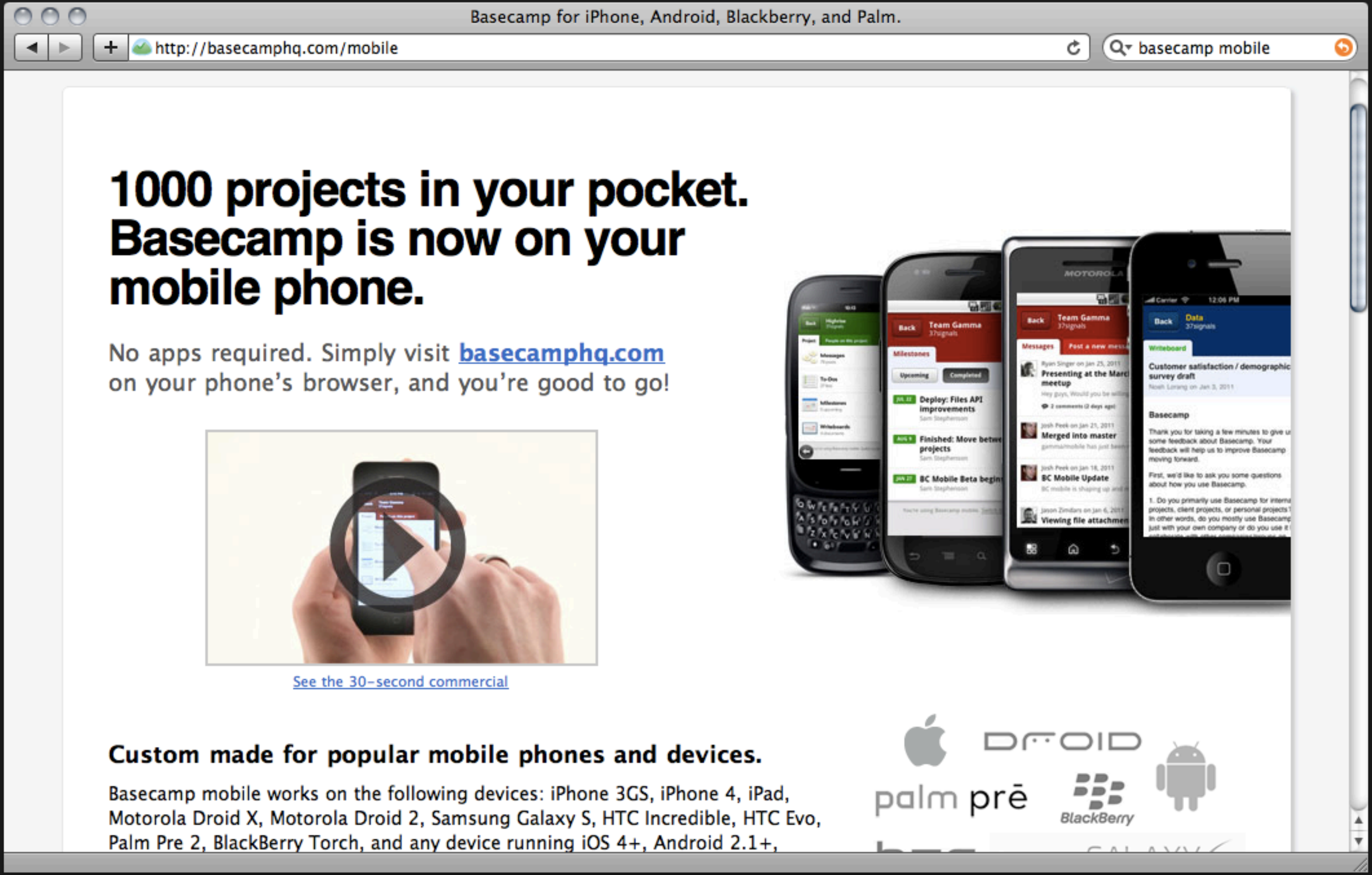
```
var adjacencyOperators = {append: 'beforeEnd', prepend: 'afterBegin', before: 'beforeBegin', after: 'afterEnd'};

for (key in adjacencyOperators)
  $.fn[key] = (function(operator) {
    return function(html){
      return this.each(function(index, element){
        if (html instanceof Z) {
          dom = html;
          if (operator == 'afterBegin' || operator == 'afterEnd')
            for (var i=0; i<dom.length; i++) element['insertAdjacentElement'](operator, dom[dom.length-i-1]);
          else
            for (var i=0; i<dom.length; i++) element['insertAdjacentElement'](operator, dom[i]);
        } else {
          element['insertAdjacent'+(html instanceof Element ? 'Element' : 'HTML')](operator, html);
        }
      });
    };
  })(adjacencyOperators[key]);
```

(doesn’t work on Firefox!)

Zepto.js

http://github.com/madrobby/zepto

- ✓ CSS Selectors and DOM manipulation
- ✓ Ajax including x-domain JSONP
- ✓ Events (including touch events)
- ✓ Polyfills and bug fixes for older WebKits
- ✓ Modular (can leave out events, xhr, etc.)
- ⚠ WebKit only! (with focus on mobile)


Basecamp for iPhone, Android, Blackberry, and Palm.
http://basecamphq.com/mobile
basecamp mobile

1000 projects in your pocket. Basecamp is now on your mobile phone.

No apps required. Simply visit basecamphq.com on your phone's browser, and you're good to go!

See the 30-second commercial

Custom made for popular mobile phones and devices.

Basecamp mobile works on the following devices: iPhone 3GS, iPhone 4, iPad, Motorola Droid X, Motorola Droid 2, Samsung Galaxy S, HTC Incredible, HTC Evo, Palm Pre 2, BlackBerry Torch, and any device running iOS 4+, Android 2.1+,

Zappos
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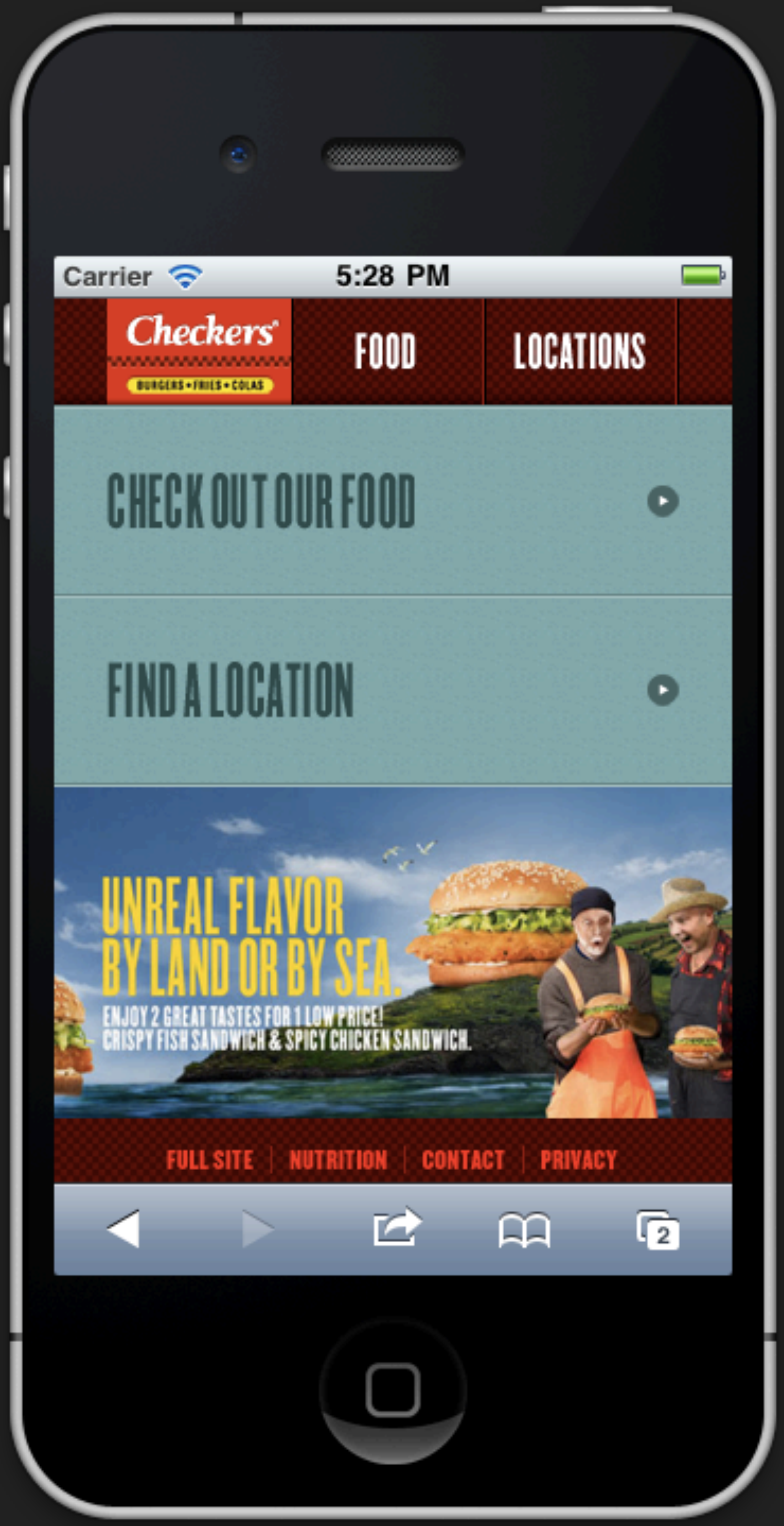
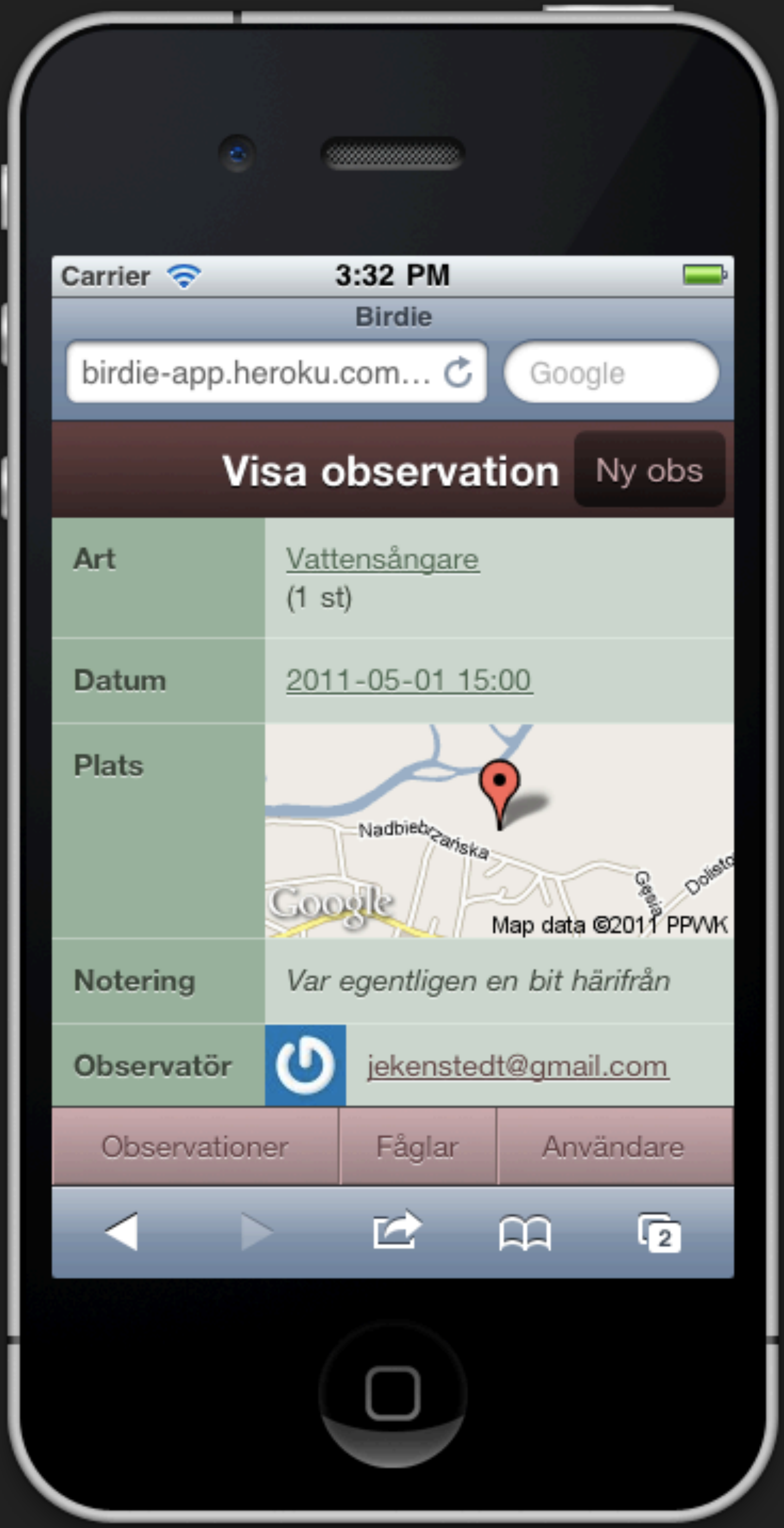


m.checkers.com

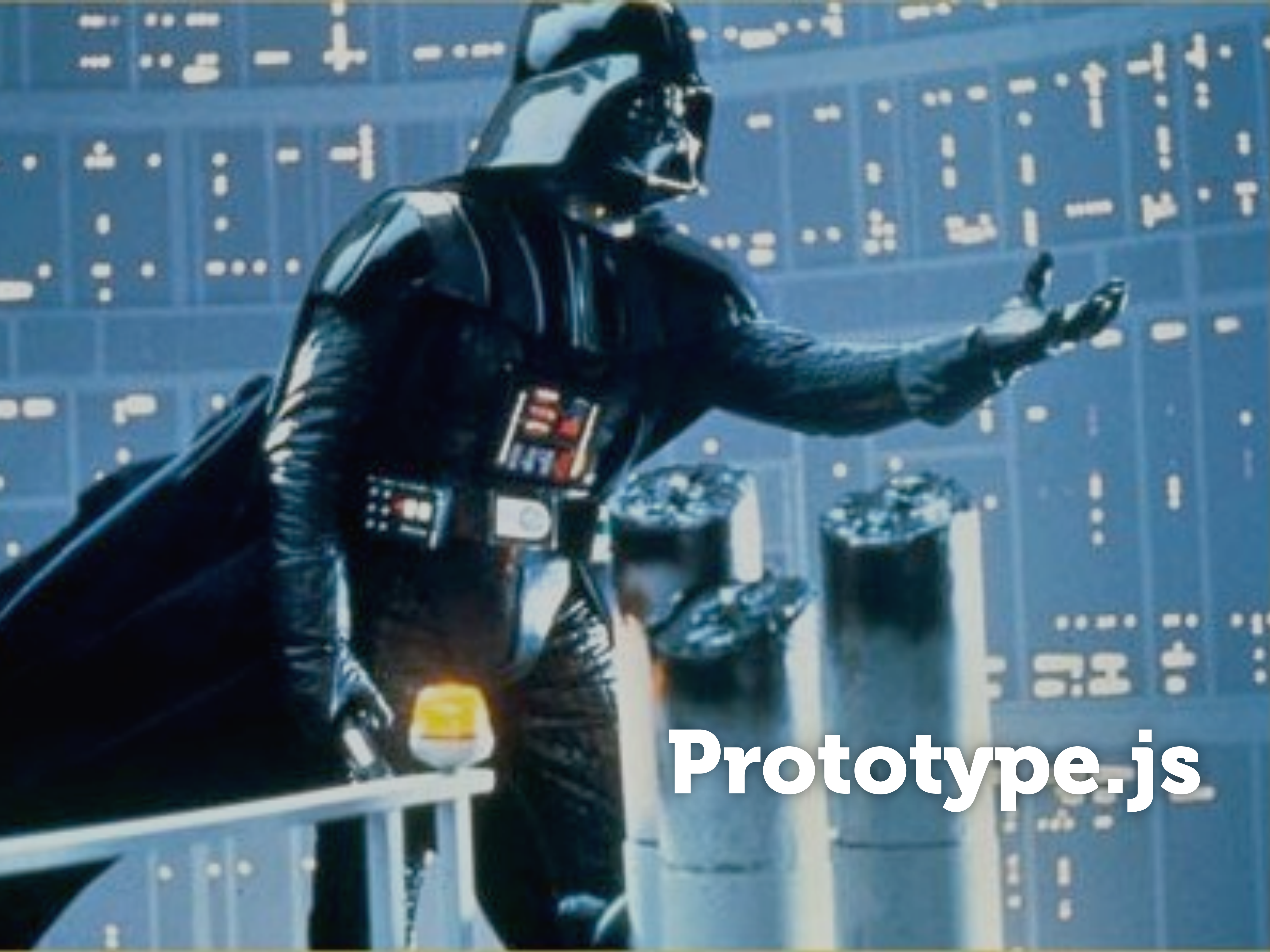


Visa observation

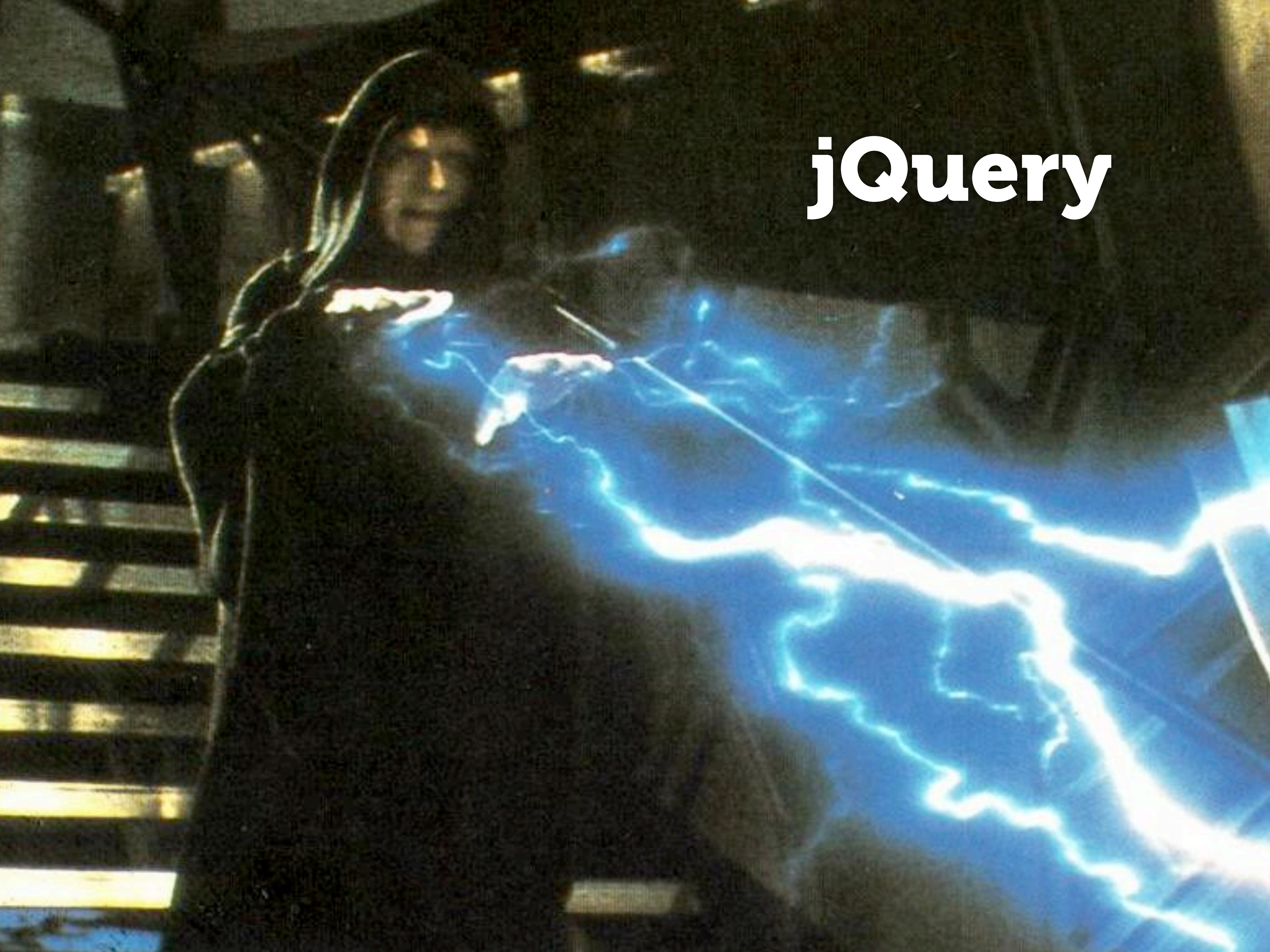
Art	Vattensångare (1 st)
Datum	2011-05-01 15:00
Plats	
Notering	*Var egentligen en bit härifrån*
Observatör	jekenstedt@gmail.com

One more thing…

scriptaculous



Prototype.js



jQuery

mootools

Micro-Frameworks

you/users are the rebels
—the ewoks are helping
you achieve your goals

O
O RE

Classic frameworks

- ⚠ Do all things and do it ok-ish
- ⚠ Force you into an API
- ⚠ Not modular/not modular enough
- ⚠ 25k+ minified & gzipped
- ⚠ Many extensions are now available in the DOM or JavaScript

Micro-Frameworks

(are awesome!)

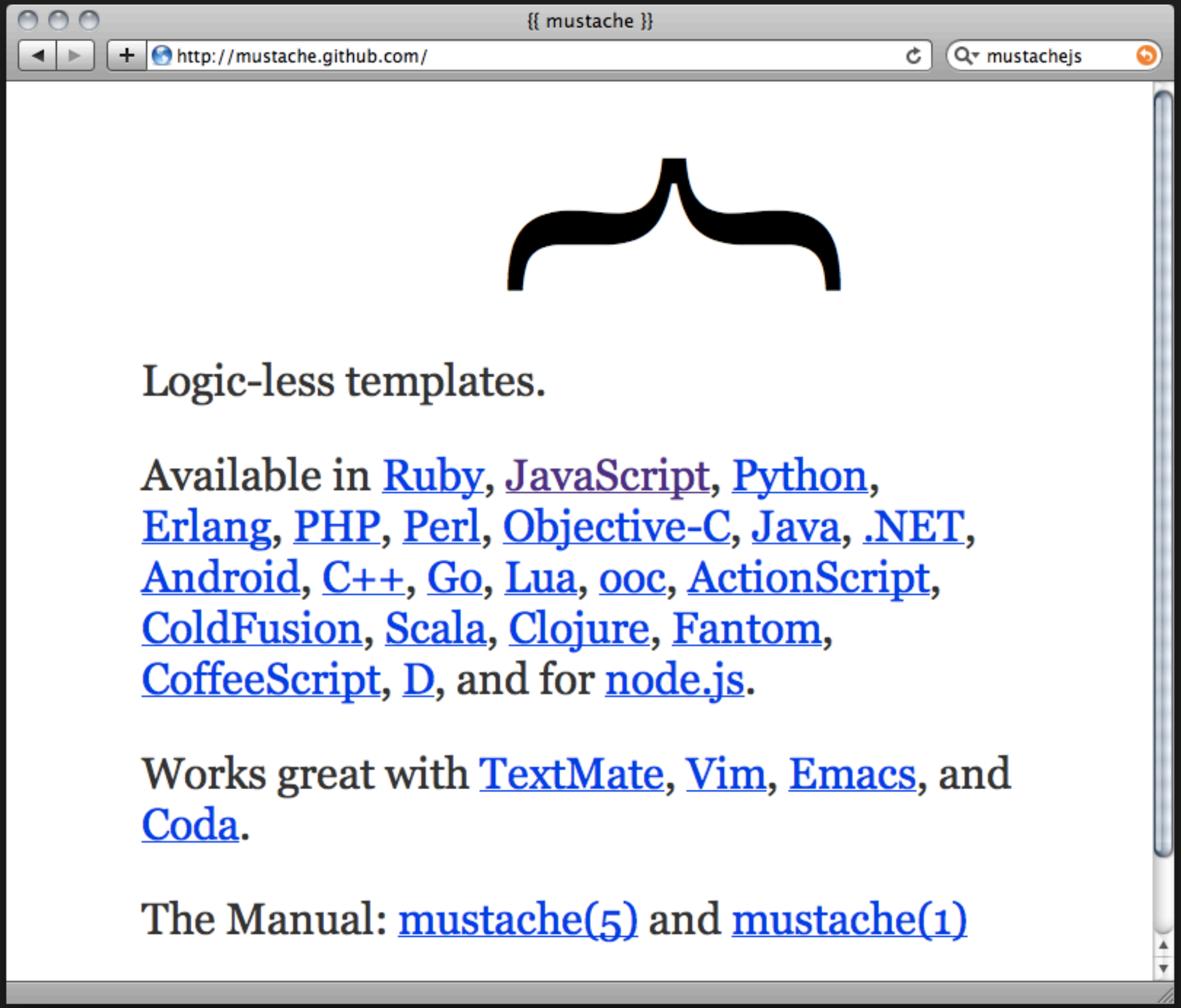
do one thing and do it really well

smaller than 5k, minified & gzipped

use directly or loosely coupled

Small is beautiful

- ✓ easier to understand code & fork
- ✓ downloads and runs faster
- ✓ fewer bugs (less code!)
- ✓ ...and you'll learn how JavaScript REALLY works



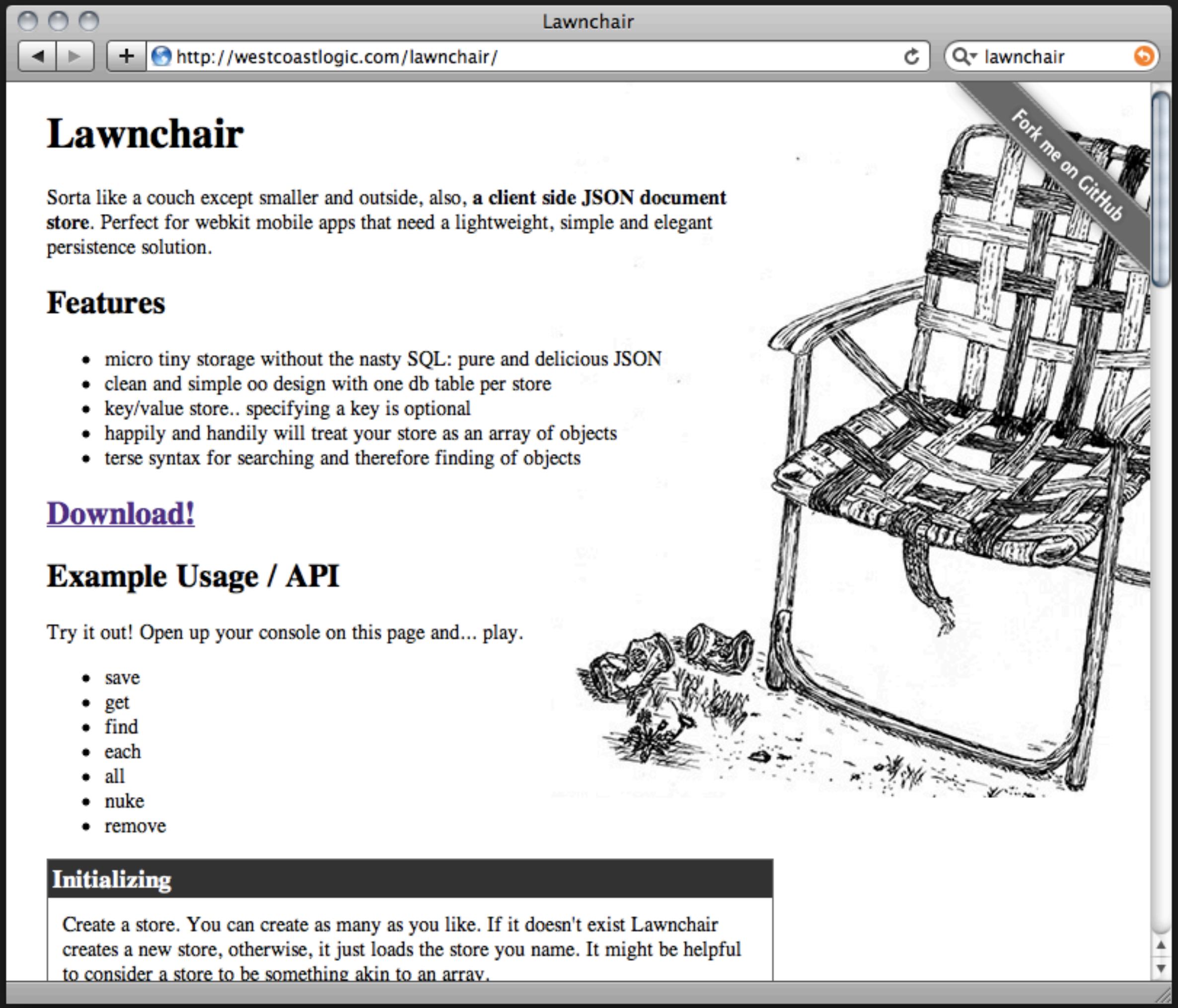
Logic-less templates.

Available in Ruby, JavaScript, Python, Erlang, PHP, Perl, Objective-C, Java, .NET, Android, C++, Go, Lua, ooc, ActionScript, ColdFusion, Scala, Clojure, Fantom, CoffeeScript, D, and for node.js.

Works great with TextMate, Vim, Emacs, and Coda.

The Manual: mustache(5) and mustache(1)

{{ mustache }} ~ 1.5k



Lawnchair

Sorta like a couch except smaller and outside, also, **a client side JSON document store**. Perfect for webkit mobile apps that need a lightweight, simple and elegant persistence solution.

Features

- micro tiny storage without the nasty SQL: pure and delicious JSON
- clean and simple oo design with one db table per store
- key/value store.. specifying a key is optional
- happily and handily will treat your store as an array of objects
- terse syntax for searching and therefore finding of objects

Download!

Example Usage / API

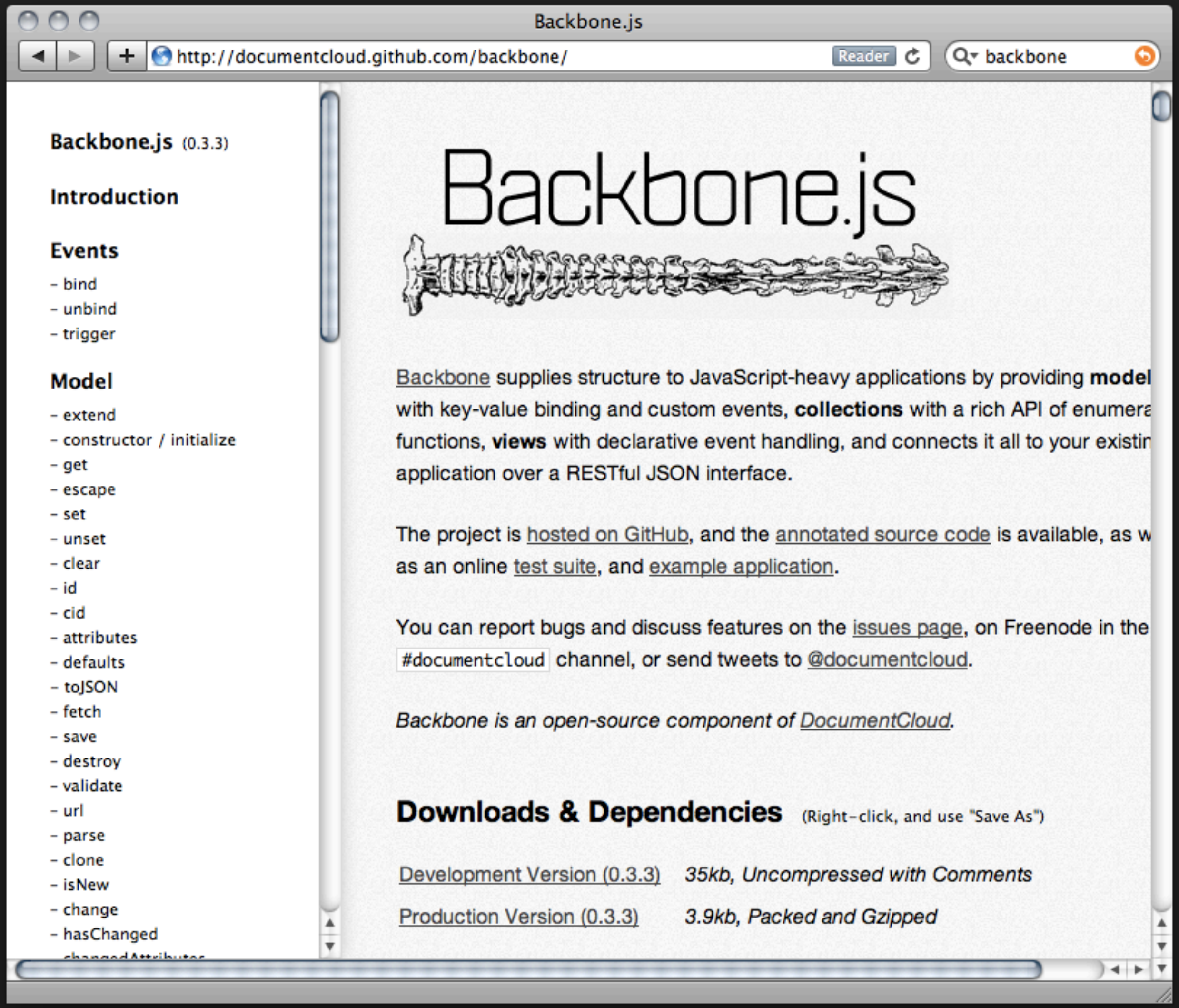
Try it out! Open up your console on this page and... play.

- save
- get
- find
- each
- all
- nuke
- remove

Initializing

Create a store. You can create as many as you like. If it doesn't exist Lawnchair creates a new store, otherwise, it just loads the store you name. It might be helpful to consider a store to be something akin to an array.

Lawnchair ~ 2.0k



Backbone supplies structure to JavaScript-heavy applications by providing **model** with key-value binding and custom events, **collections** with a rich API of enumera functions, **views** with declarative event handling, and connects it all to your existin application over a RESTful JSON interface.

The project is hosted on GitHub, and the annotated source code is available, as w as an online test suite, and example application.

You can report bugs and discuss features on the issues page, on Freenode in the `#documentcloud` channel, or send tweets to @documentcloud.

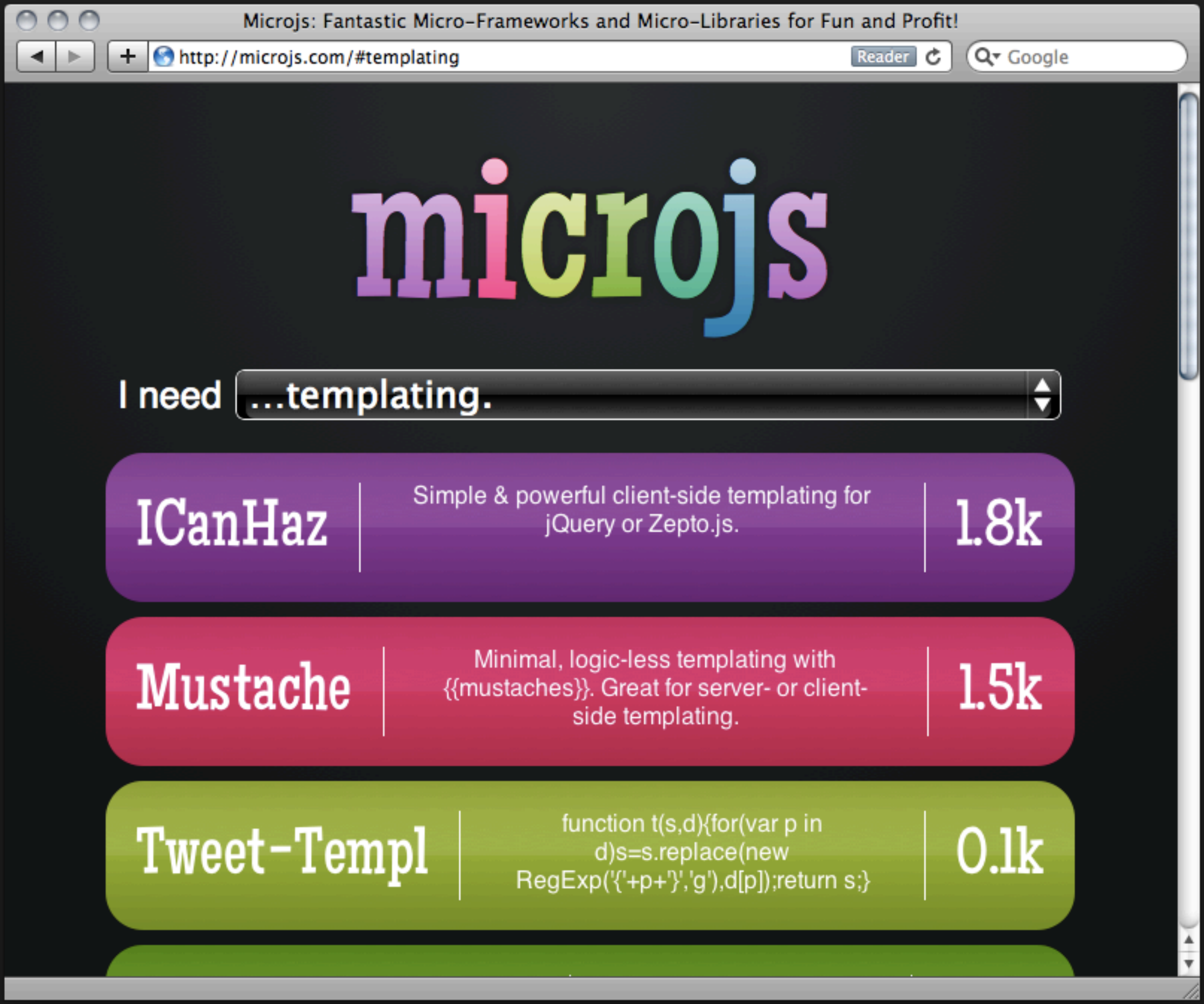
Backbone is an open-source component of DocumentCloud.

Downloads & Dependencies (Right-click, and use "Save As")

Development Version (0.3.3)	*35kb, Uncompressed with Comments*
Production Version (0.3.3)	*3.9kb, Packed and Gzipped*

Backbone.js ~ 3.9k

But how do I know what’s out there?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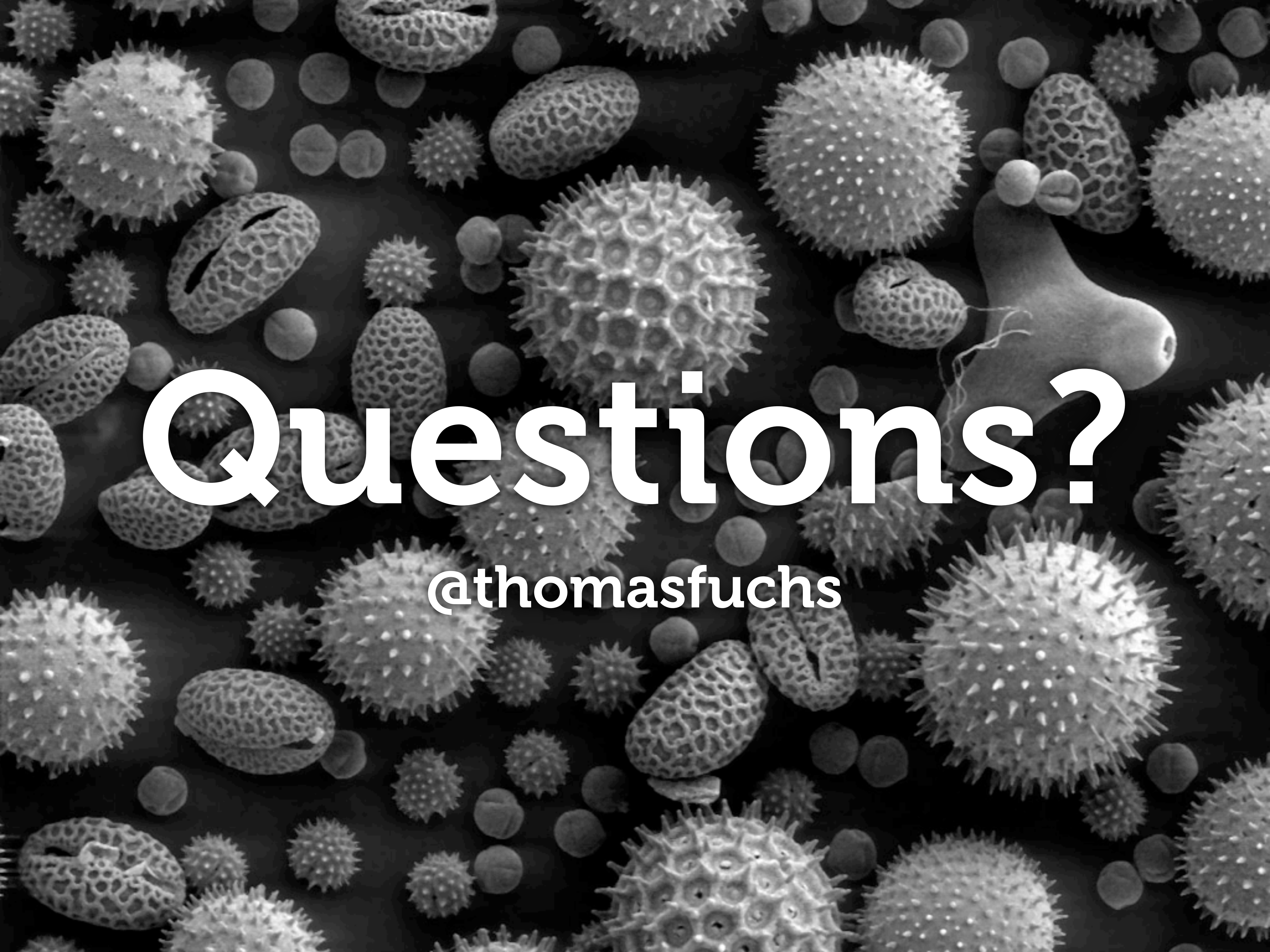

Questions?

@thomasfuchs