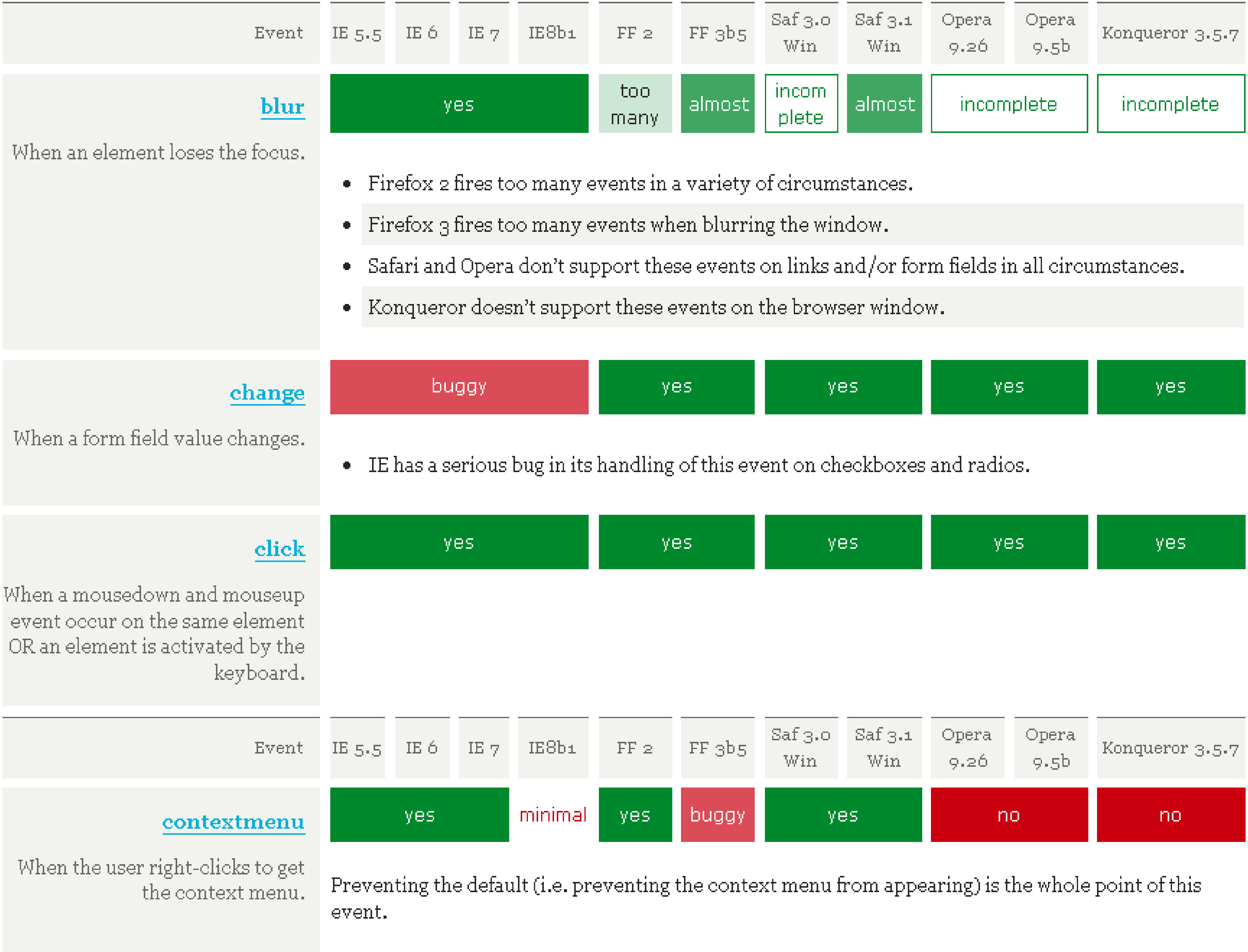
Hell is other browsers - *Sartre*

Web standards and IE8

Peter-Paul Koch (ppk)
http://twitter.com/**ppk**
http://quirksmode.org
MS Dev Days, 29 mei 2009



Event	IE 5.5	IE 6	IE 7	IE8b1	FF 2	FF 3b5	Saf 3.0 Win	Saf 3.1 Win	Opera 9.26	Opera 9.5b	Konqueror 3.5.7
blur When an element loses the focus.	yes				too many	almost	incomplete	almost	incomplete		incomplete

- Firefox 2 fires too many events in a variety of circumstances.
- Firefox 3 fires too many events when blurring the window.
- Safari and Opera don't support these events on links and/or form fields in all circumstances.
- Konqueror doesn't support these events on the browser window.

change When a form field value changes.	buggy				yes		yes		yes		yes

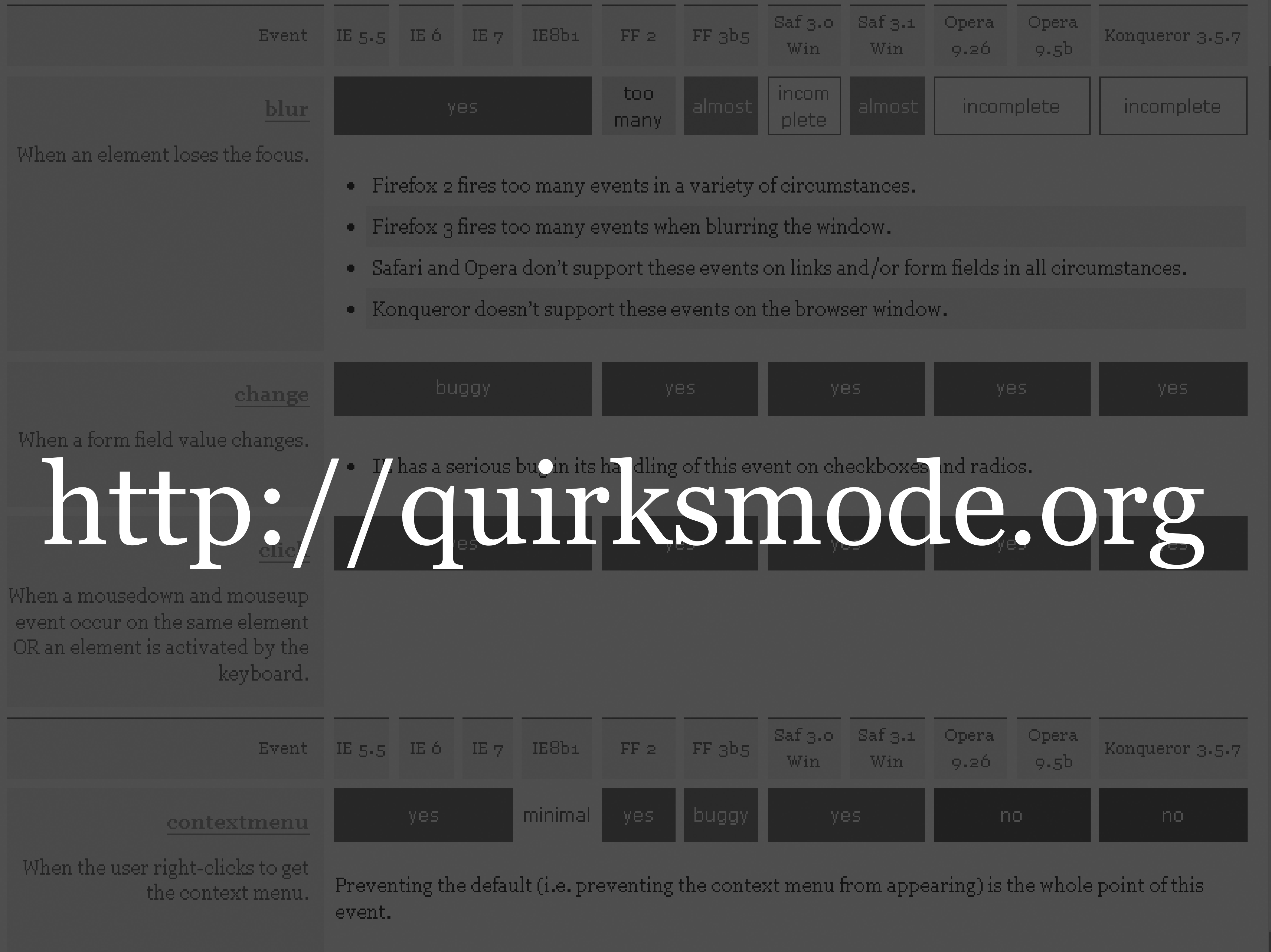
- IE has a serious bug in its handling of this event on checkboxes and radios.

click When a mousedown and mouseup event occur on the same element OR an element is activated by the keyboard.	yes				yes		yes		yes		yes

Event	IE 5.5	IE 6	IE 7	IE8b1	FF 2	FF 3b5	Saf 3.0 Win	Saf 3.1 Win	Opera 9.26	Opera 9.5b	Konqueror 3.5.7
contextmenu When the user right-clicks to get the context menu.	yes			minimal	yes	buggy	yes		no		no

Preventing the default (i.e. preventing the context menu from appearing) is the whole point of this event.

http://quirksmode.org



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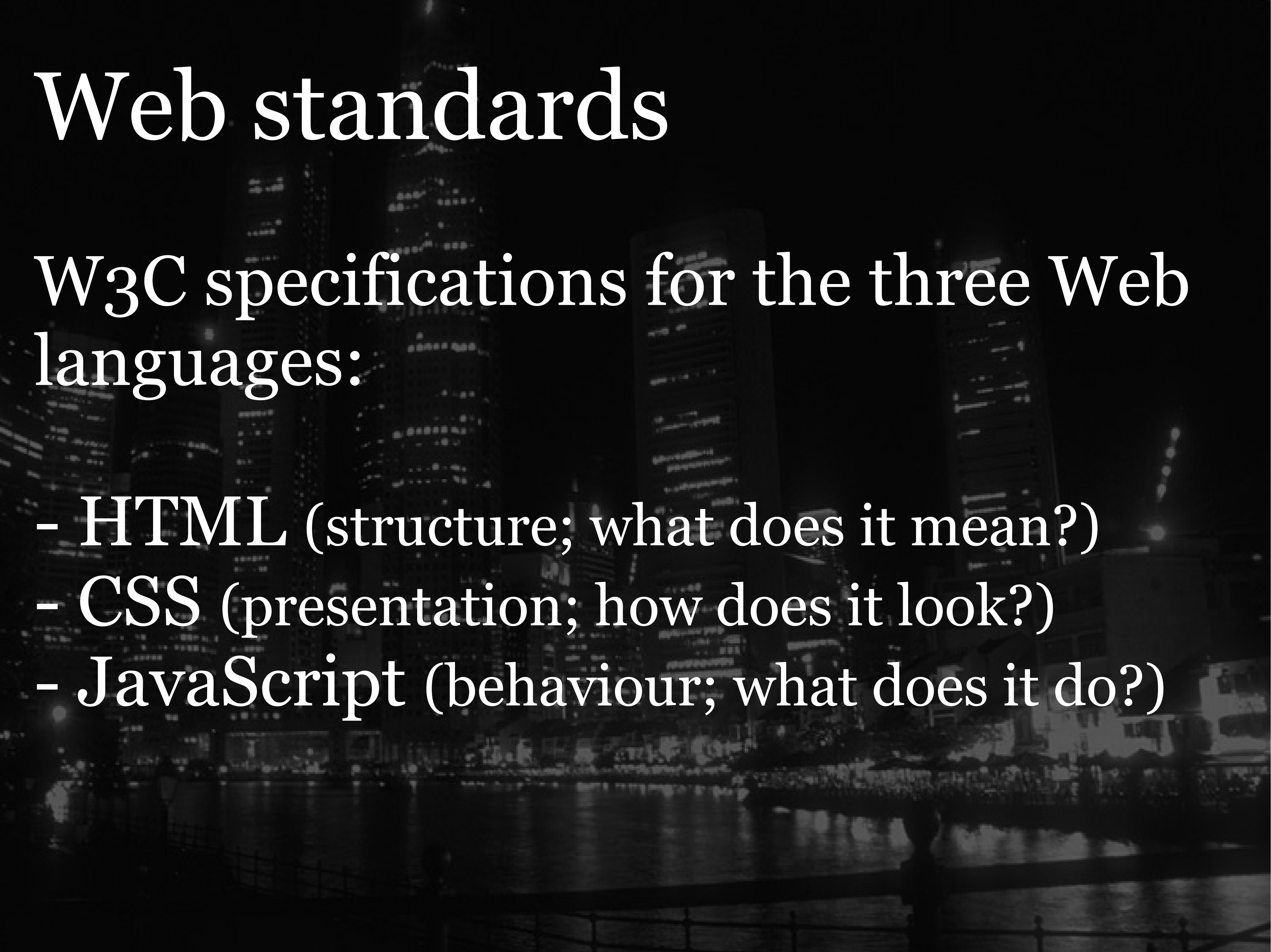


Web standards

W3C specifications for the three Web languages:

- HTML (structure; what does it mean?)
- CSS (presentation; how does it look?)
- JavaScript (behaviour; what does it do?)

Web standards

```
<h1>Hello, <span>ppk</span></h1>
```

HTML says: this is a page header
(<span> doesn't really have a meaning)

Web standards

```
<h1>Hello, <span>ppk</span></h1>
```

We want the text to be red (CSS)

and we want the user name to appear when the user mouses over the header (JavaScript)

Web standards

```
<h1
  style=”color: red”
  onmouseover=”appear()”>Hello,
    <span>ppk</span></h1>
```

Web standards

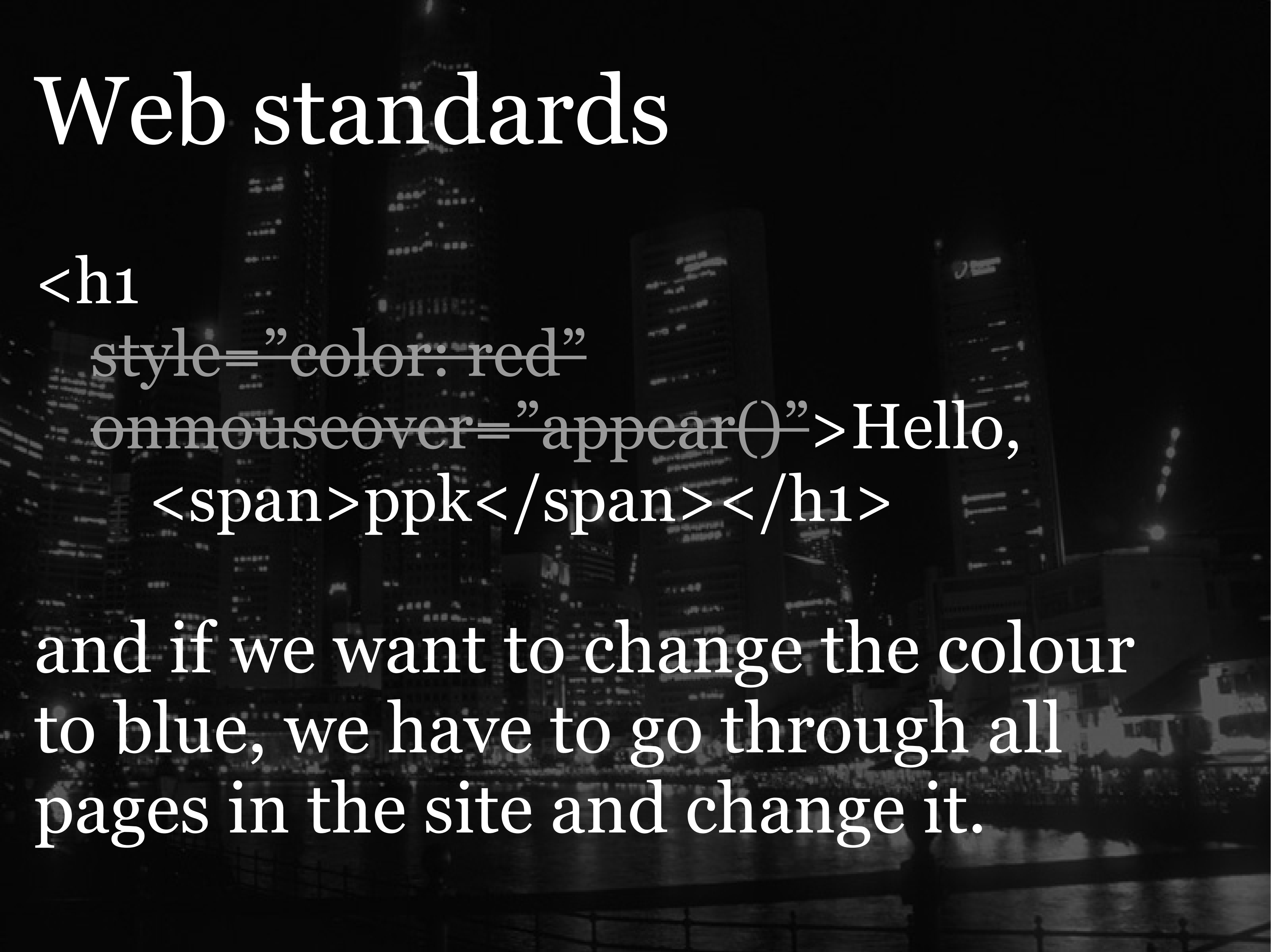
<h1
~~style=”color: red”~~
~~onmouseover=”appear()”~~>Hello,
<span>ppk</span></h1>

This is the wrong way to apply CSS and JavaScript.

Web standards

<h1
  ~~style=”color: red”~~
  ~~onmouseover=”appear()”~~>Hello,
    <span>ppk</span></h1>

If we need a similar header on another page we have to copy all this code.



Web standards

<h1
~~style=”color: red”~~
~~onmouseover=”appear()”~~>Hello,
<span>ppk</span></h1>

and if we want to change the colour to blue, we have to go through all pages in the site and change it.

Web standards

```
<h1>Hello, <span>ppk</span></h1>
```

Instead we use separation of concerns:

Separate files for our HTML, CSS, and JavaScript.

Web standards

```
<h1>Hello, <span>ppk</span></h1>
```

CSS:

```
h1 {
   color: red
}
```

Ease of maintenance 1:
Change the colour

Web standards

```
<h1>Hello, <span>ppk</span></h1>
```

```
CSS:
h1 {
  color: ~~red~~ blue;
}
```

Web standards

```
<h1>Hello, <span>ppk</span></h1>
```

JavaScript:

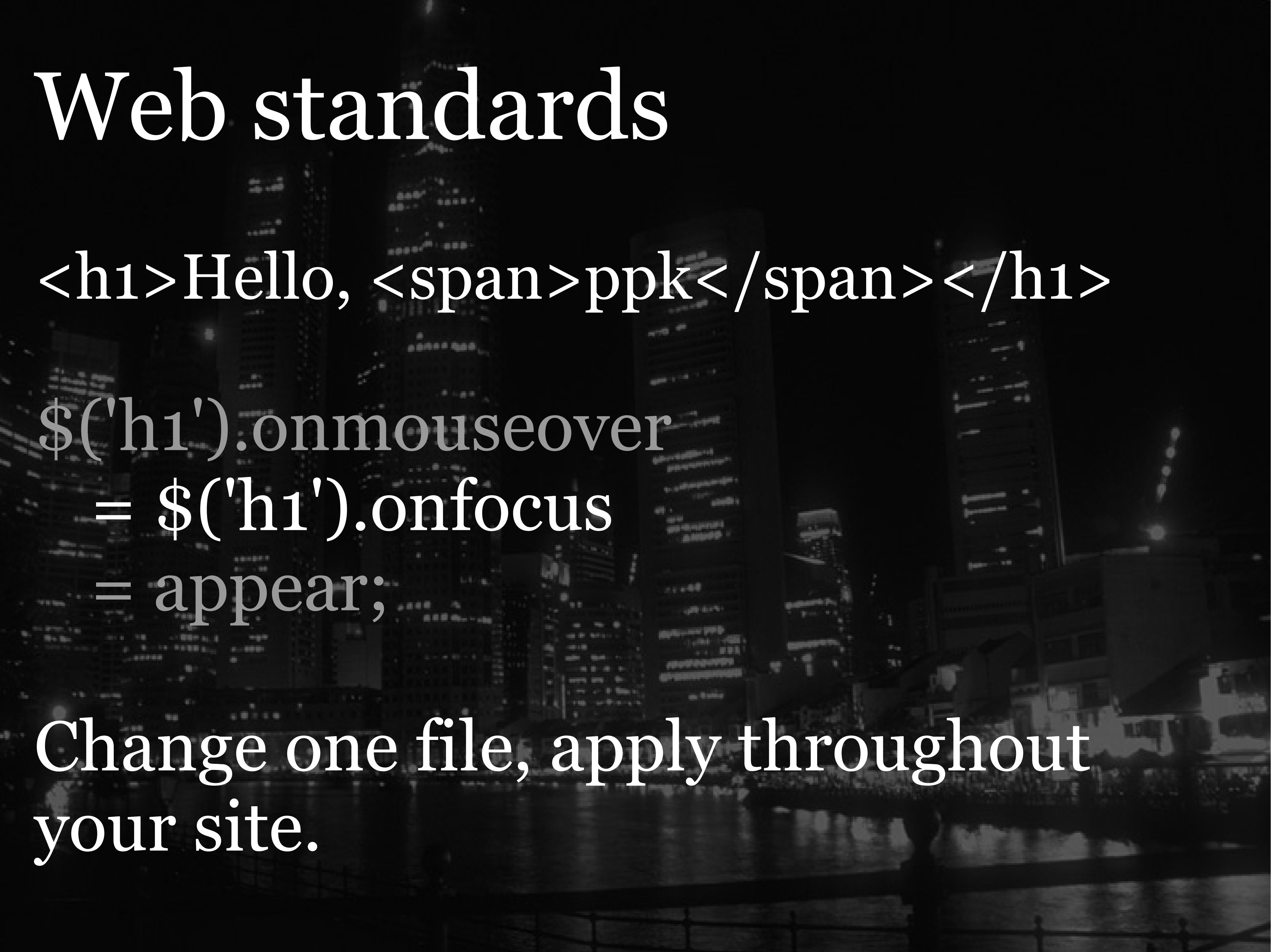
```
$('h1').onmouseover = appear;
```

Ease of maintenance 2:
It's useful to add a focus event to every mouseover event.

Web standards

```
<h1>Hello, <span>ppk</span></h1>

$('h1').onmouseover
  = appear;
```



Web standards

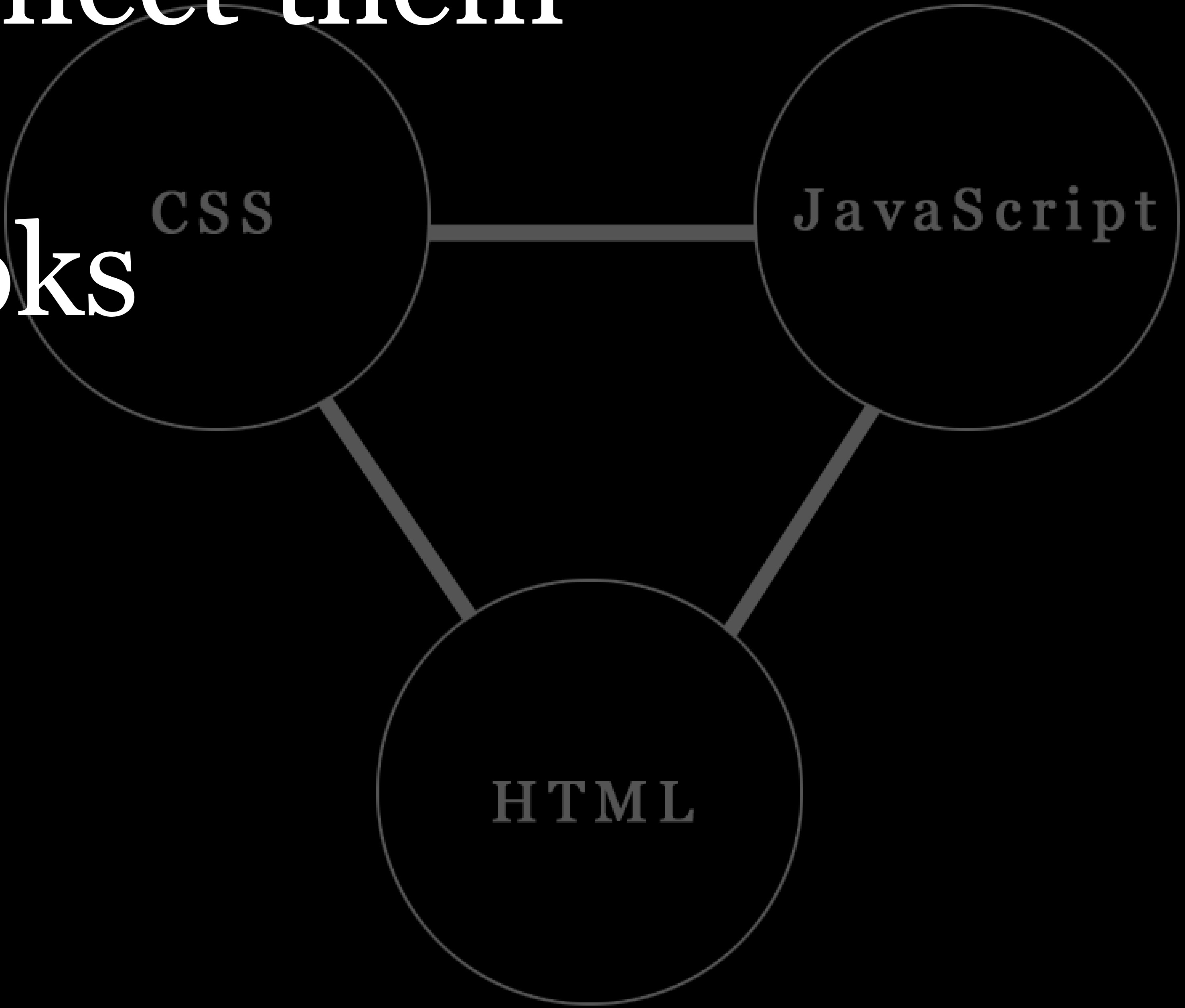
```
<h1>Hello, <span>ppk</span></h1>
```

```
$('h1').onmouseover
   = $('h1').onfocus
   = appear;
```

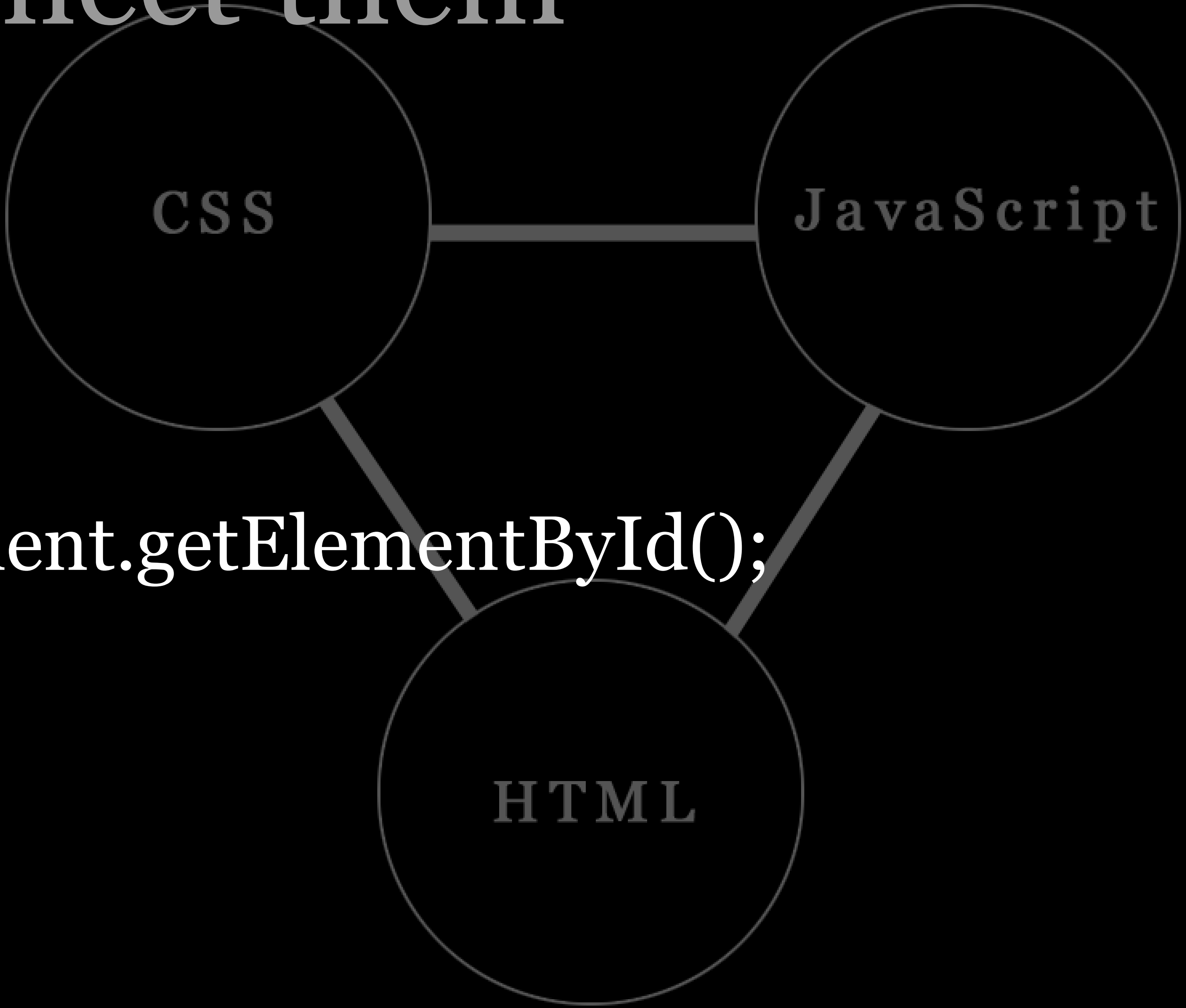
Change one file, apply throughout your site.

Connect them

Hooks



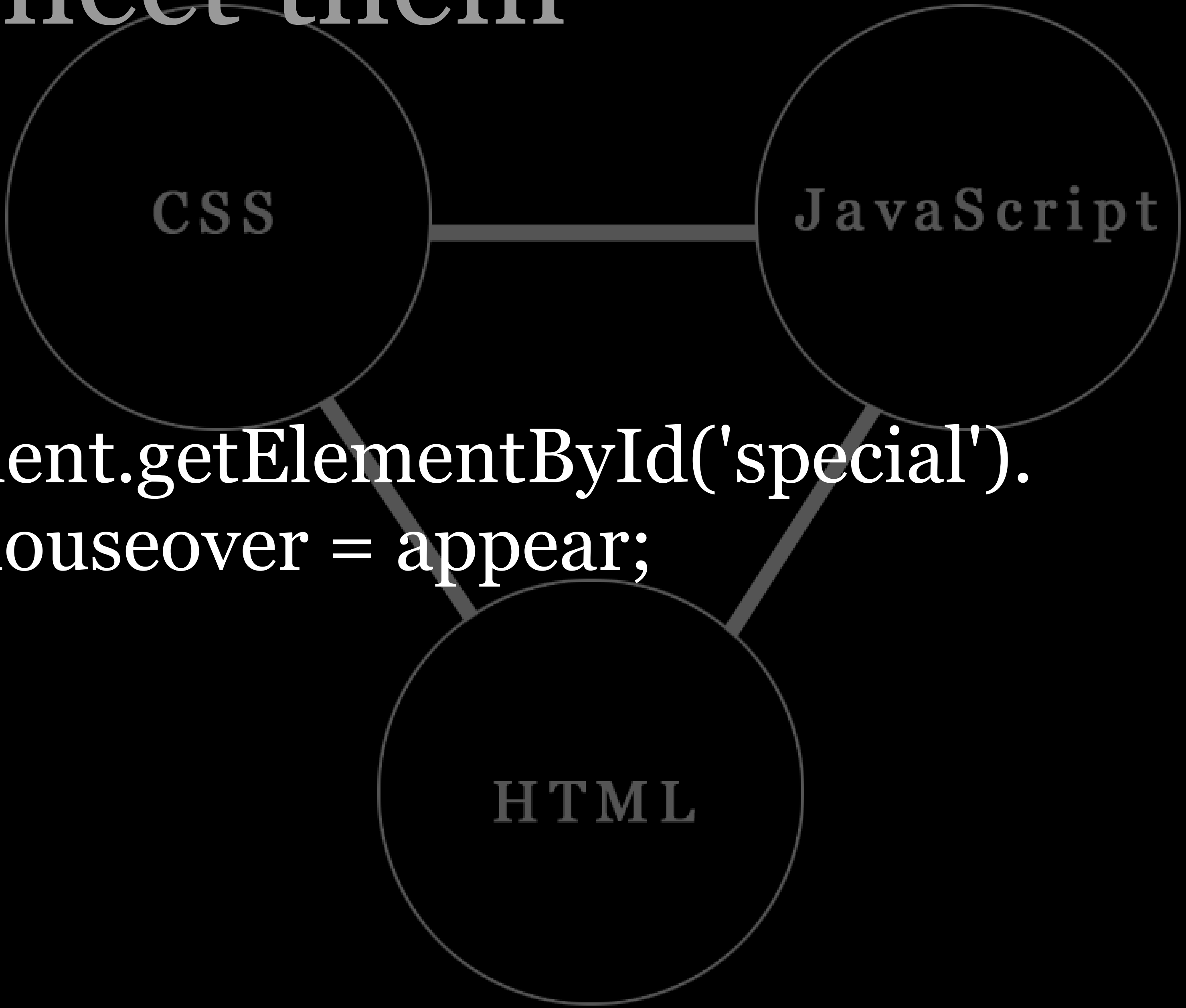
Connect them



- id

#id {}
document.getElementById();

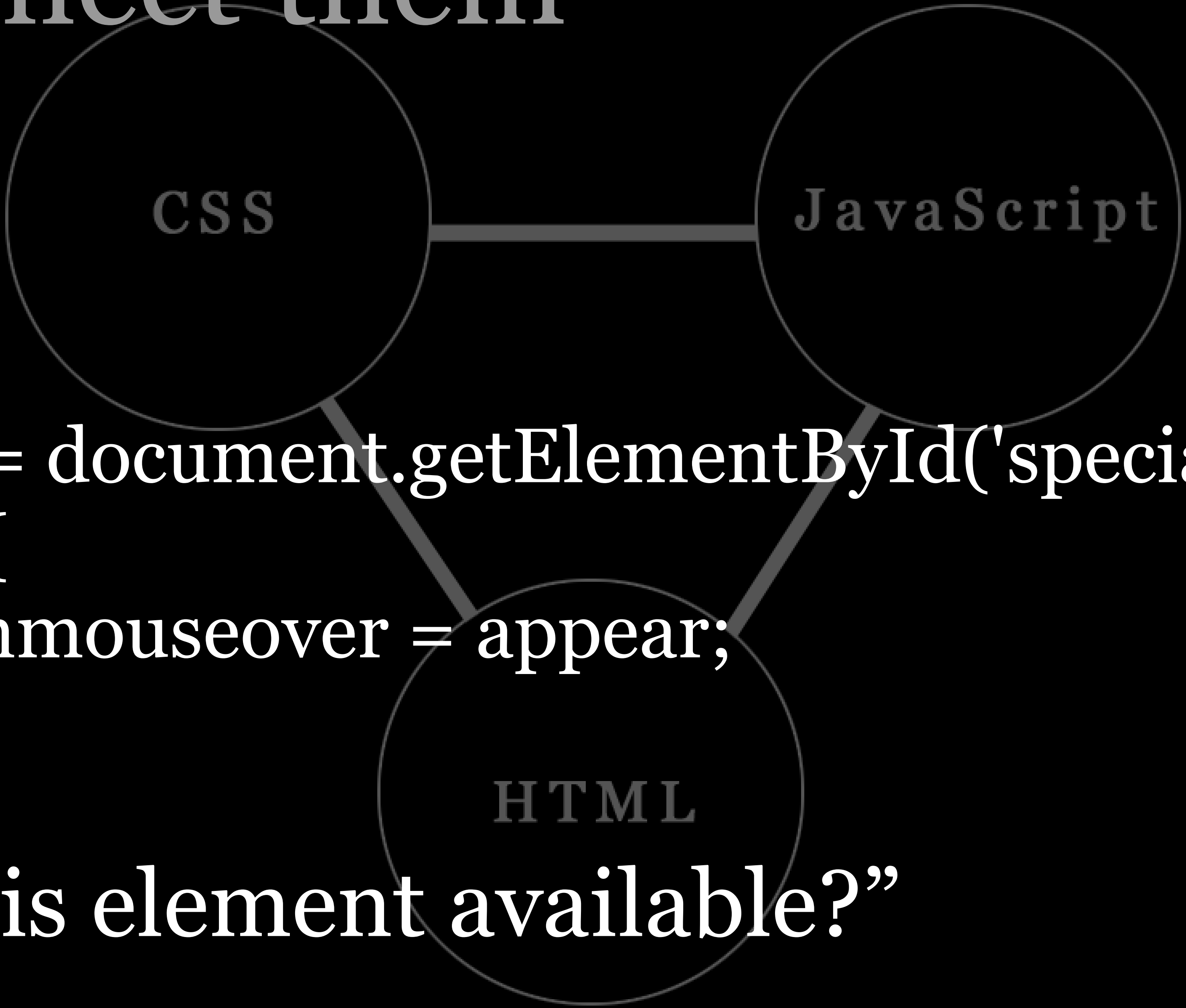
Connect them



- id

```
document.getElementById('special').
    onmouseover = appear;
```

Connect them

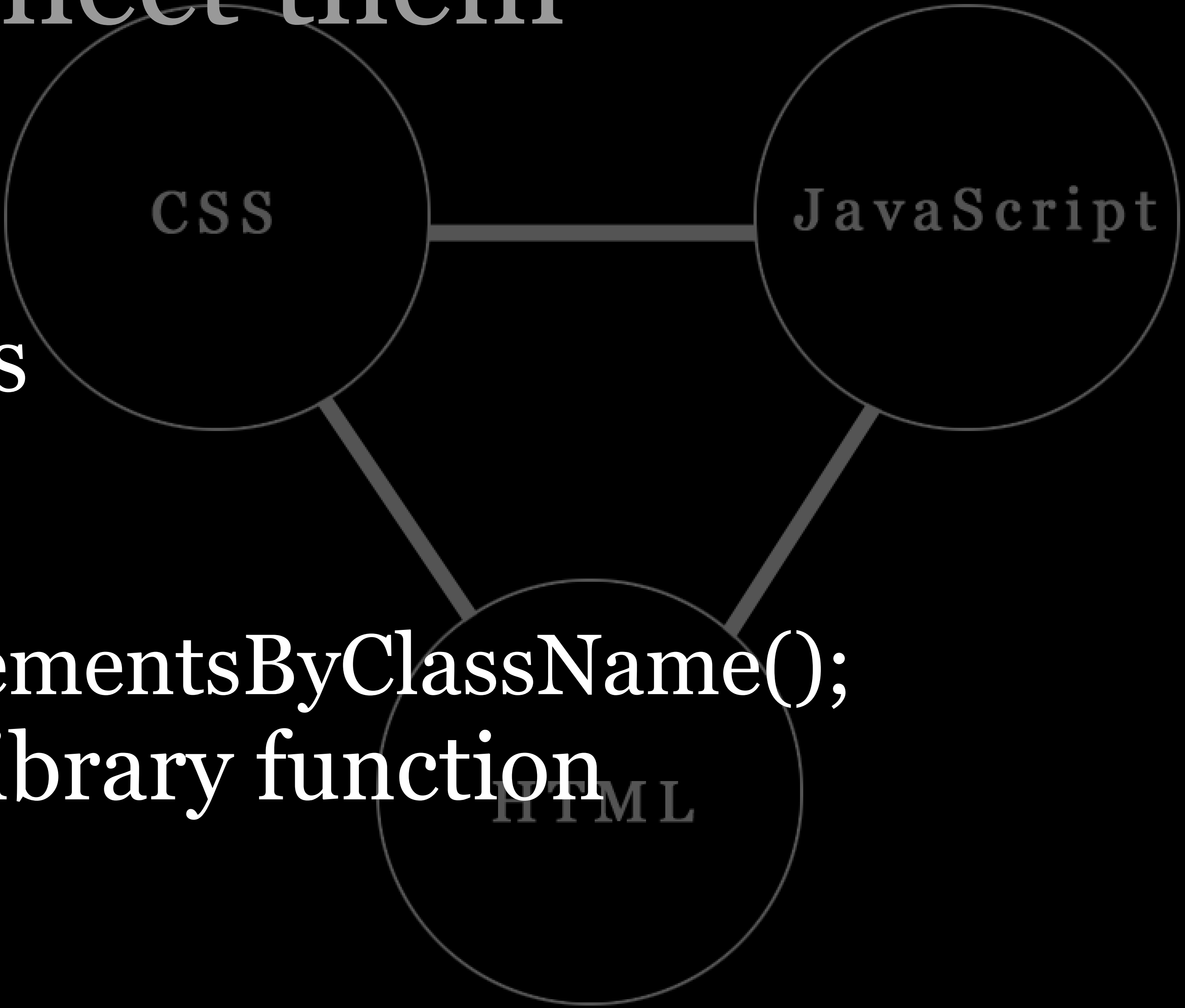


- id

```
var el = document.getElementById('special');
if (el) {
    el.onmouseover = appear;
}
```

“Is this element available?”

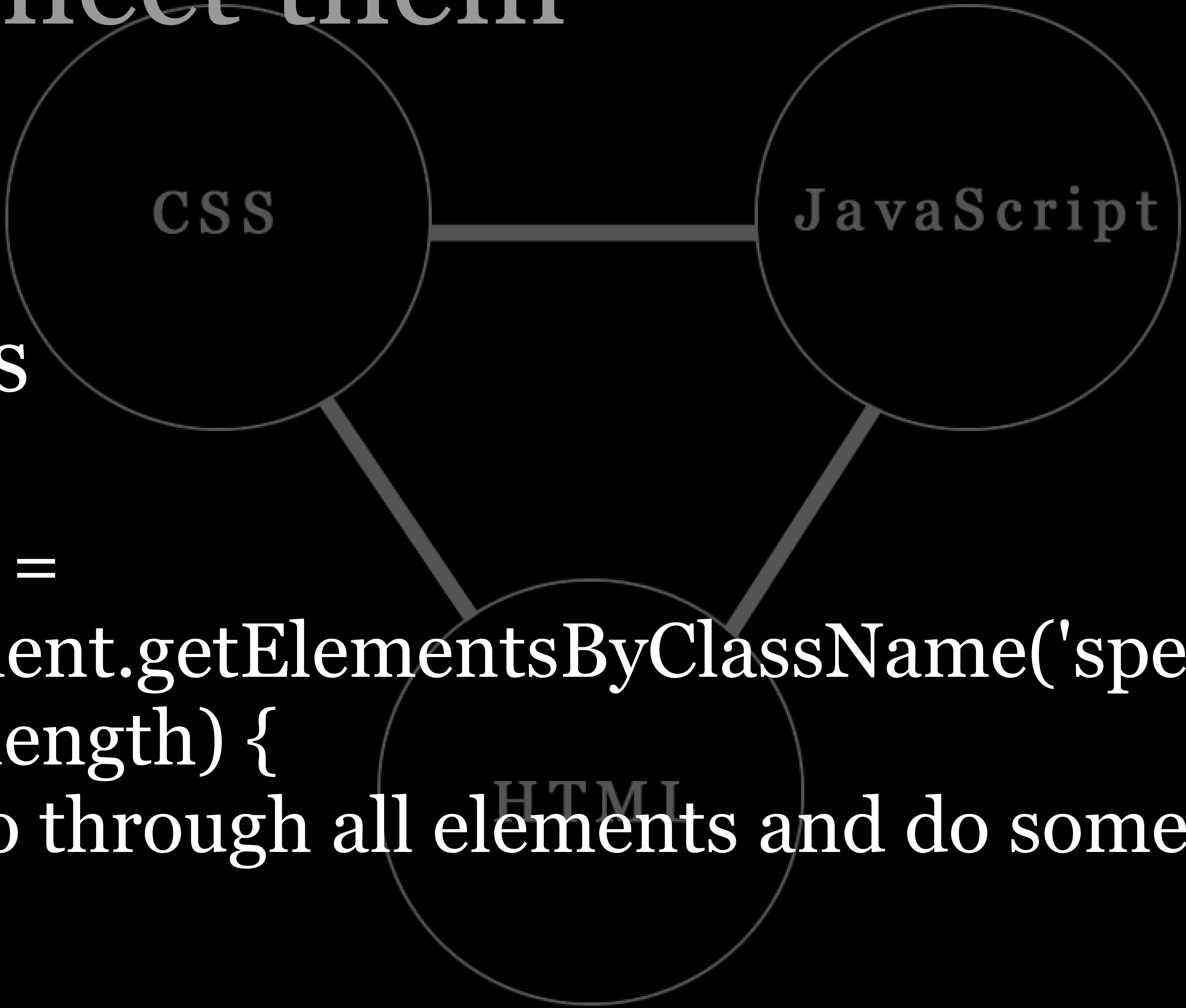
Connect them



- id
- class

.class
getElementsByClassName();
or a library function

Connect them



- id
- class

```
var els =
document.getElementsByClassName('special')
if (els.length) {
    // go through all elements and do something
}
```

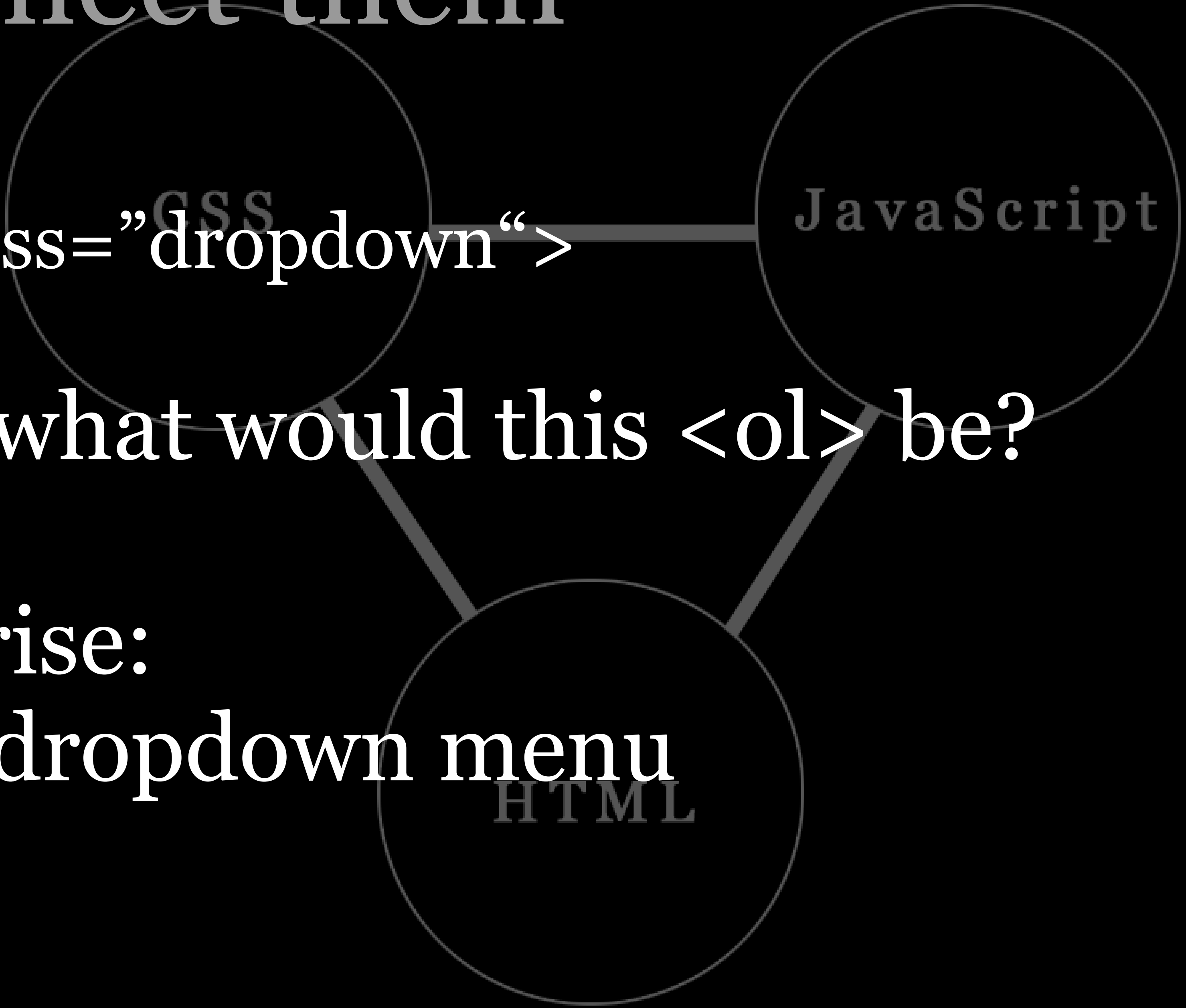
Connect them

CSS
JavaScript
HTML

- id
- class

Use the same hook for presentation and behavior; for CSS and JavaScript.

Connect them

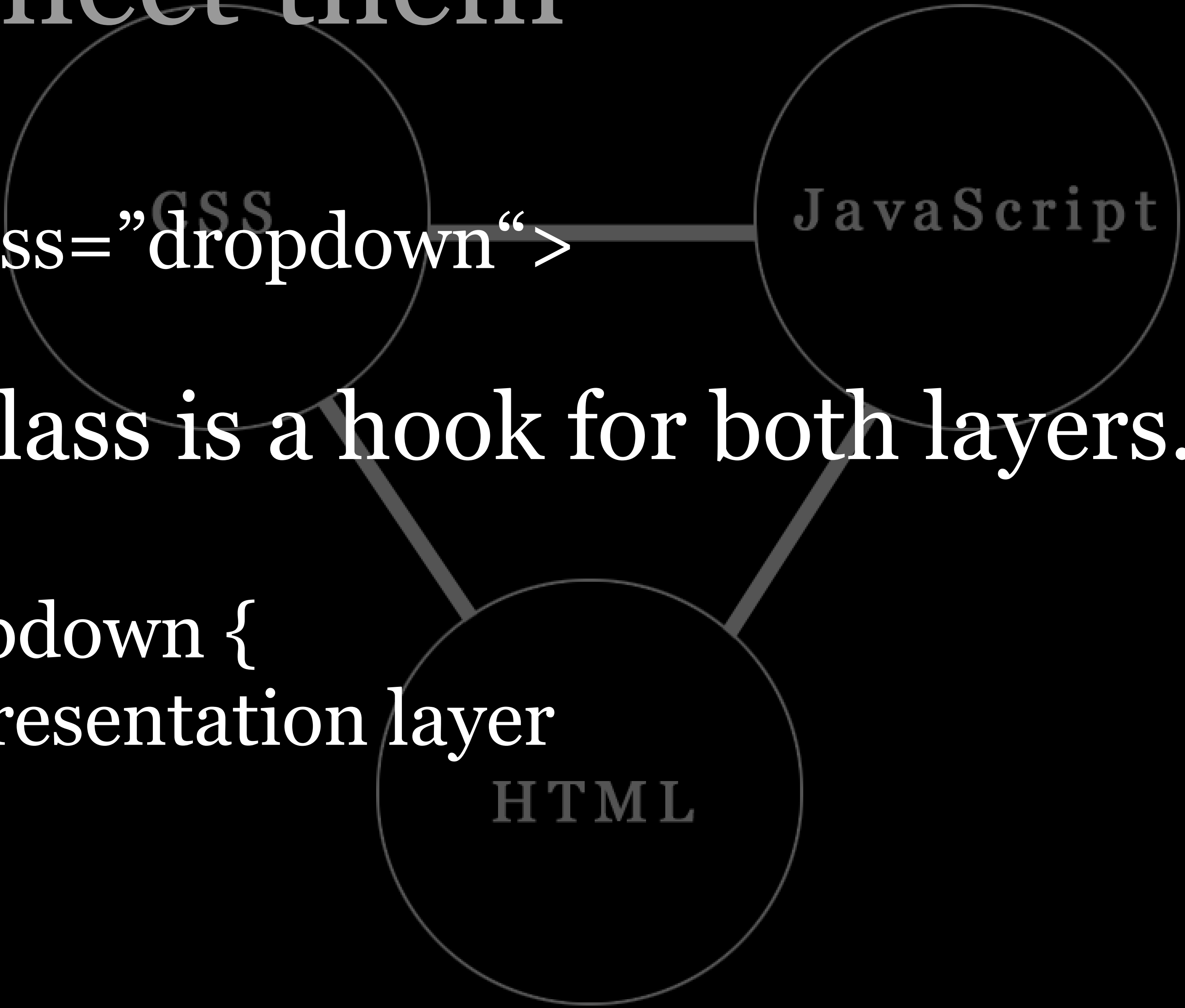


<ol class=”dropdown“>

Now what would this <ol> be?

Surprise:
it's a dropdown menu

Connect them

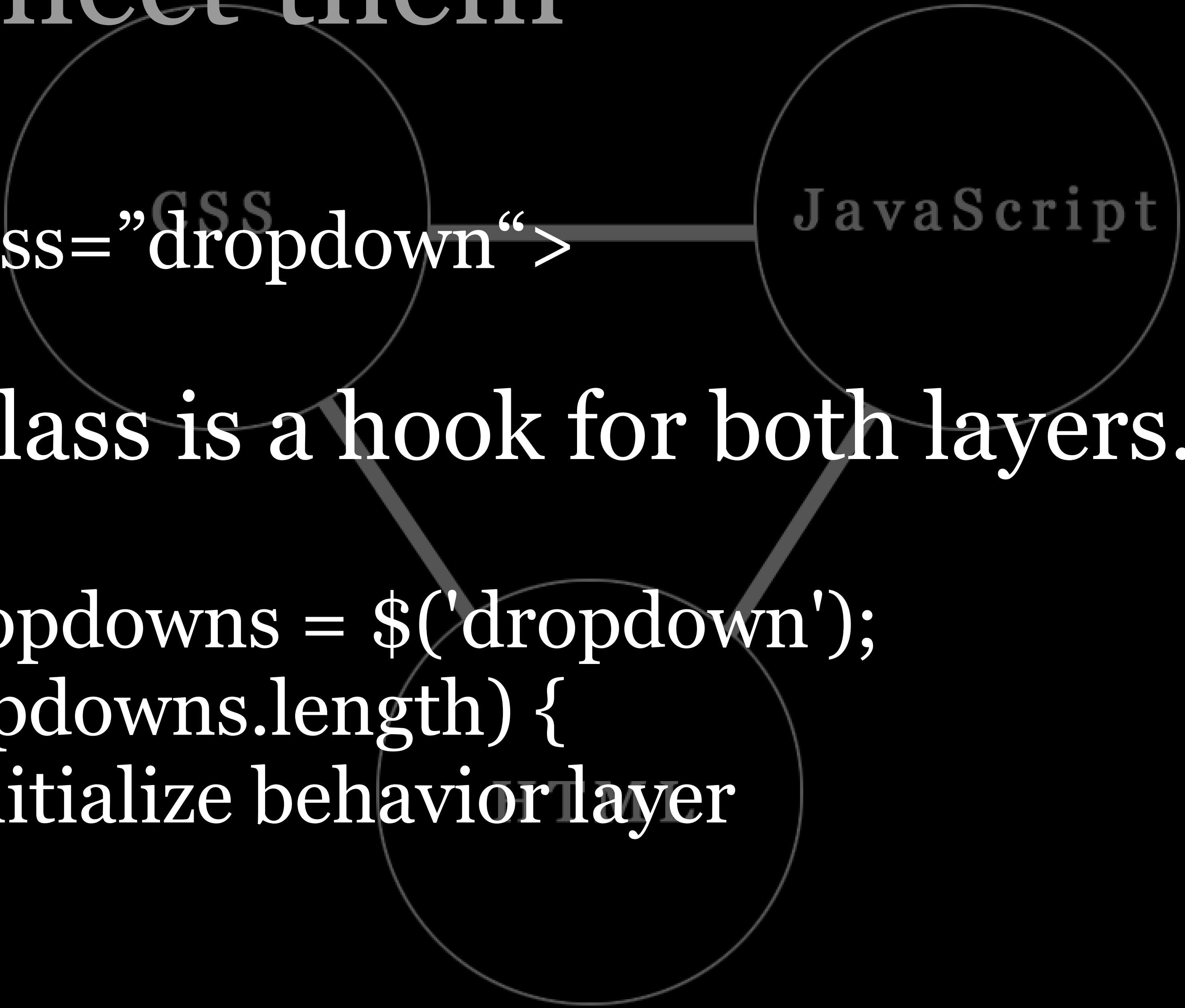


<ol class=”dropdown“>

The class is a hook for both layers.

```
ol.dropdown {
   // presentation layer
}
```

Connect them



```
<ol class=”dropdown“>
```

The class is a hook for both layers.

```
var dropdowns = $('dropdown');
if (dropdowns.length) {
    // initialize behavior layer
}
```

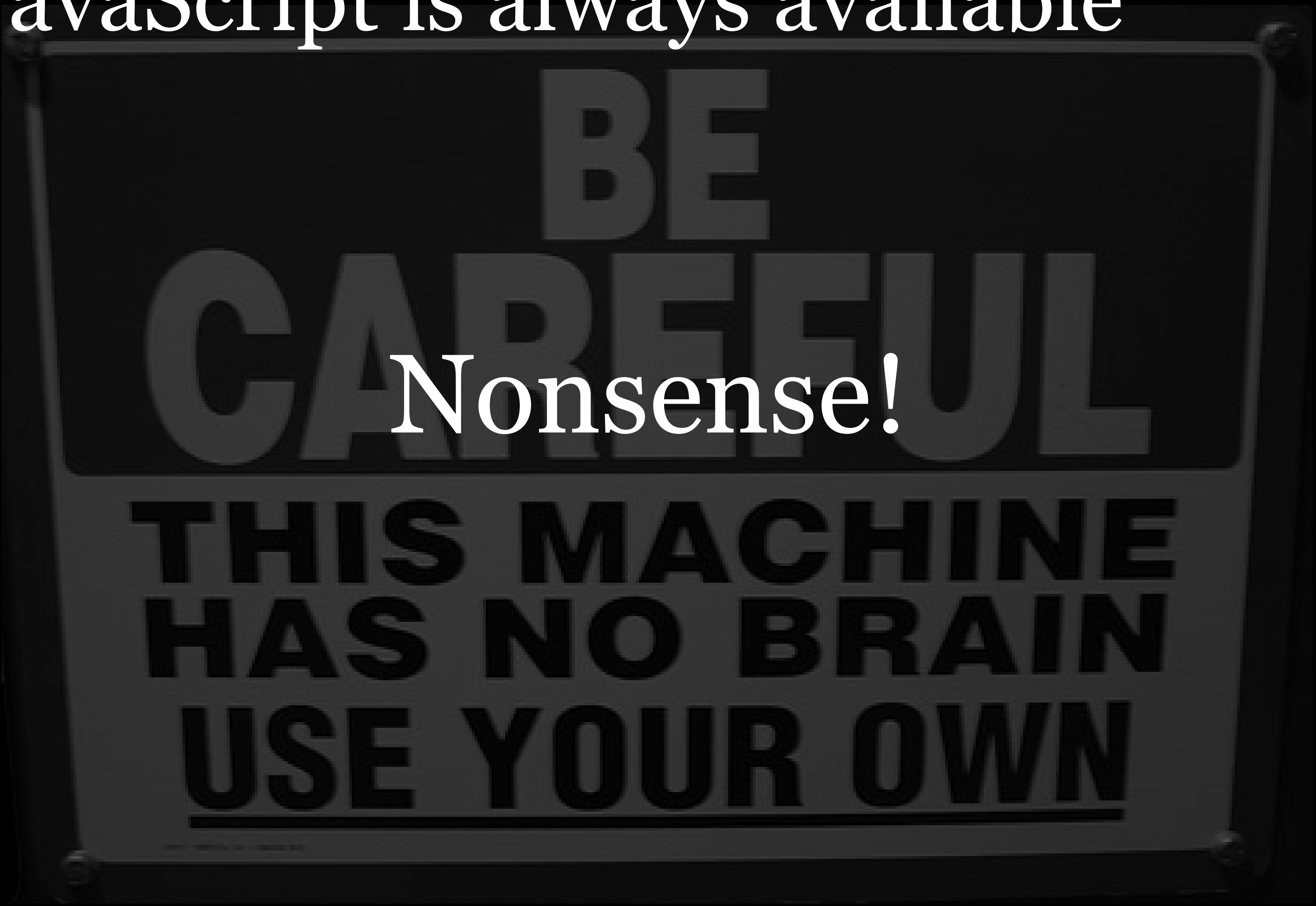
BE CAREFUL

THIS MACHINE HAS NO BRAIN

USE YOUR OWN

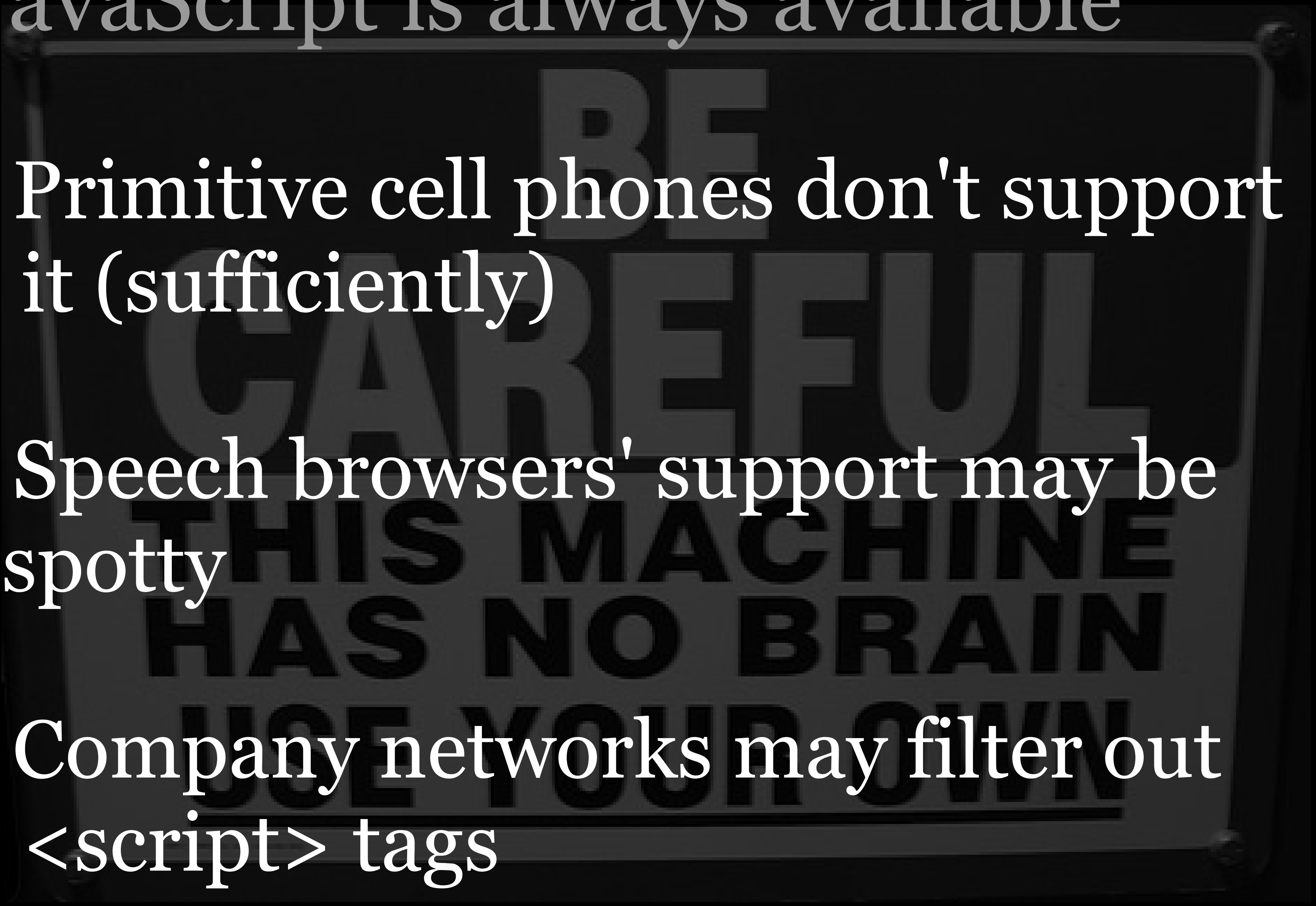
Some common myths about JavaScript

JavaScript is always available



Nonsense!

JavaScript is always available



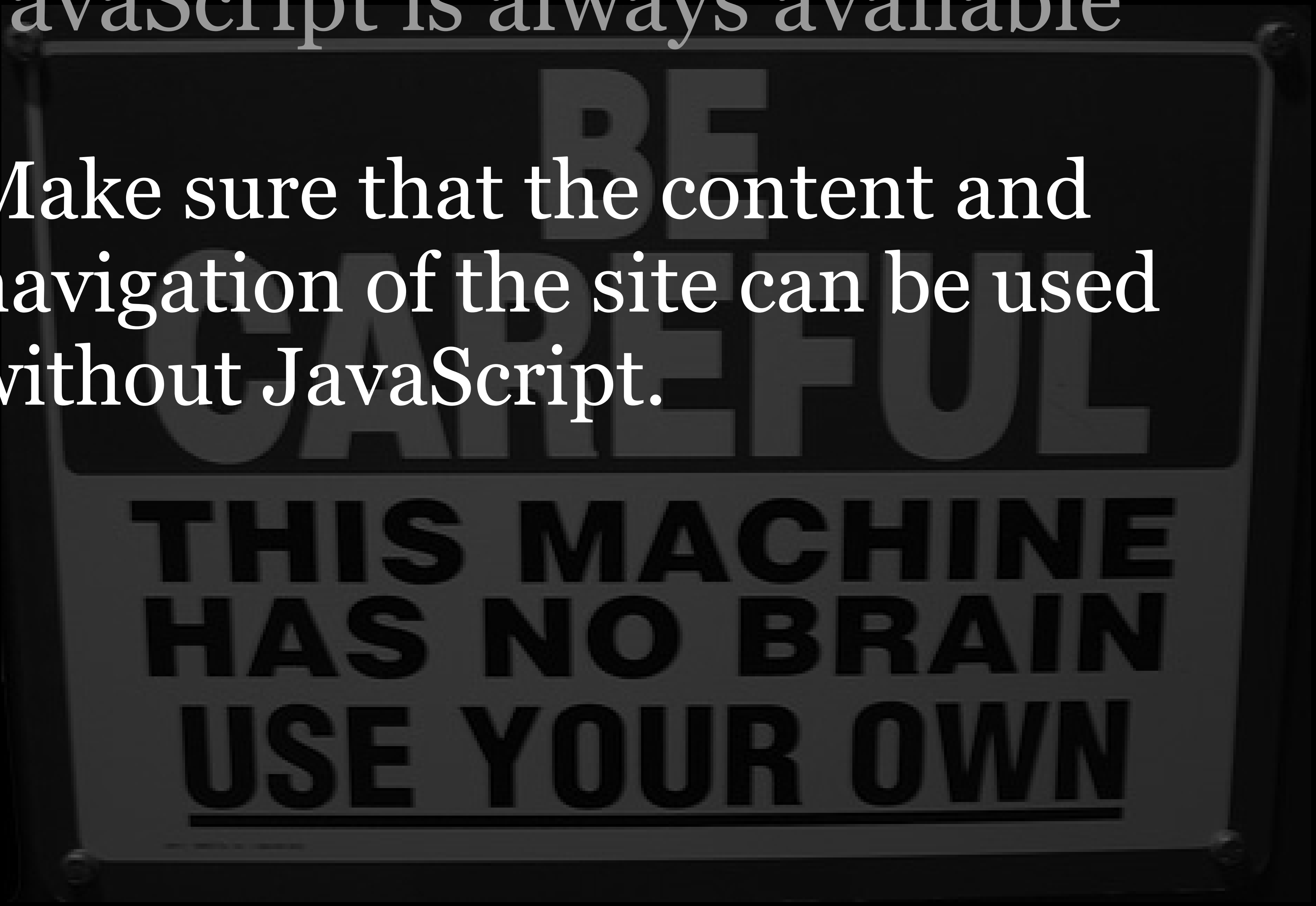
- Primitive cell phones don't support it (sufficiently)

- Speech browsers' support may be spotty

- Company networks may filter out <script> tags

JavaScript is always available

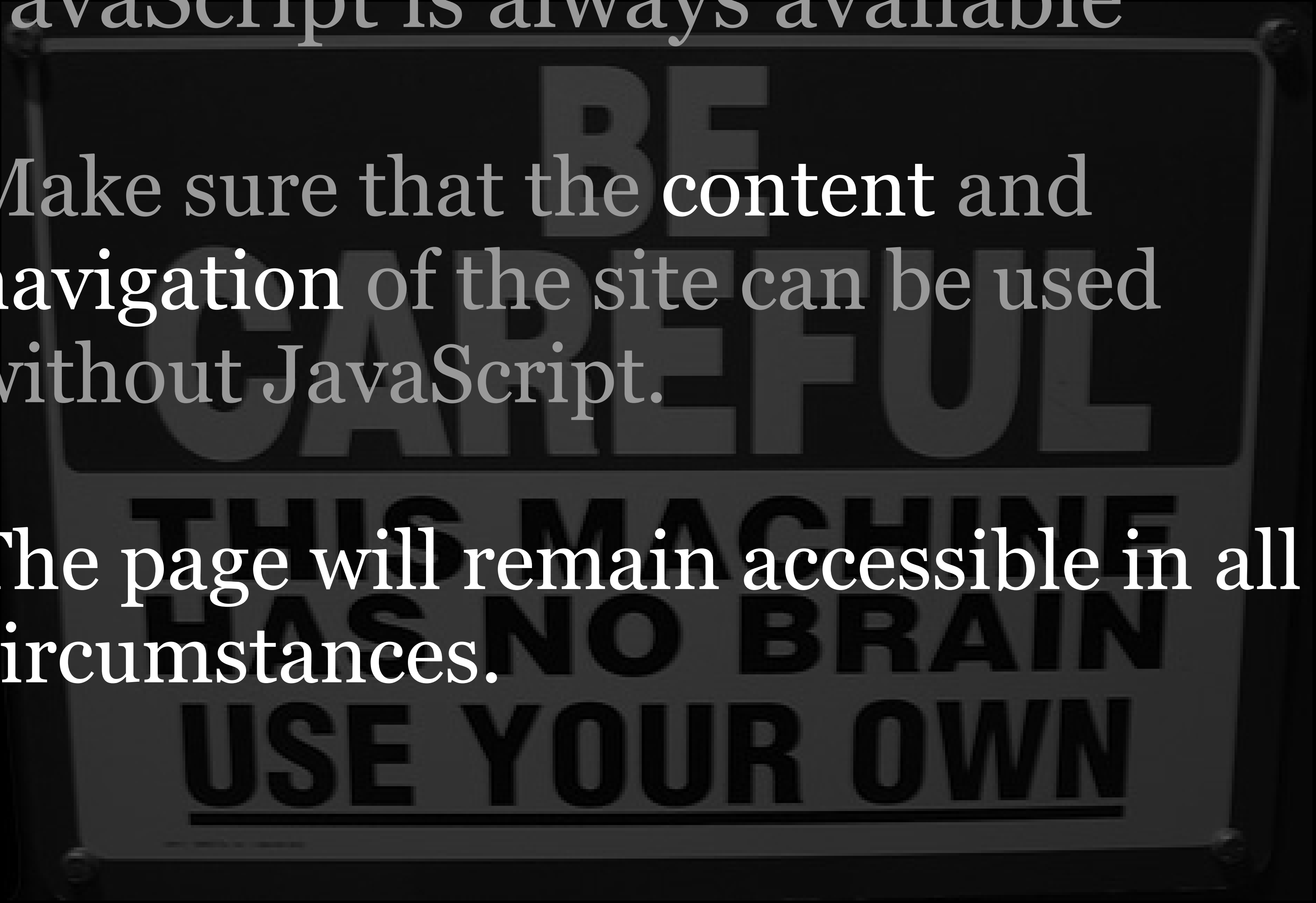
Make sure that the content and navigation of the site can be used without JavaScript.



JavaScript is always available

Make sure that the content and navigation of the site can be used without JavaScript.

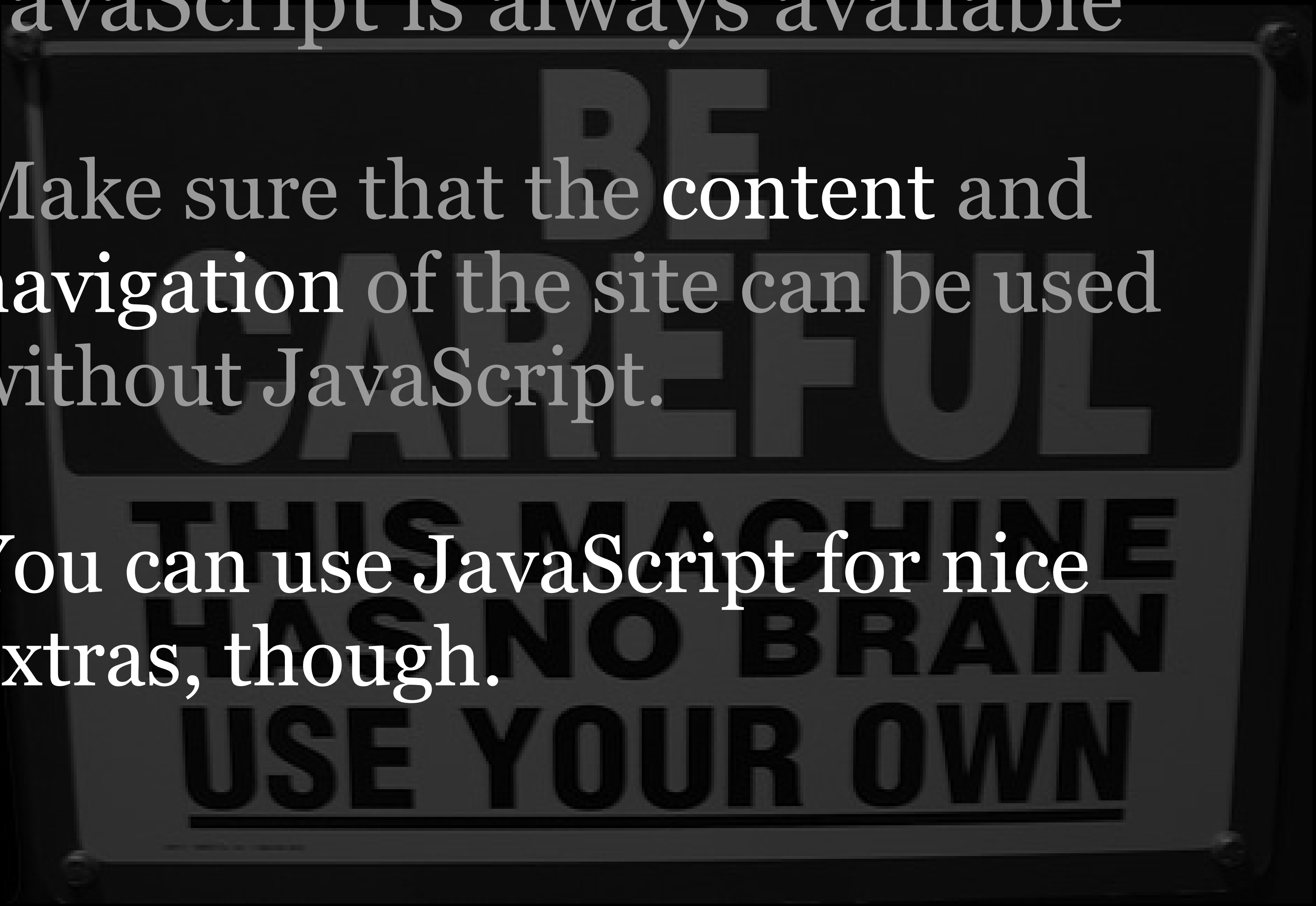
The page will remain accessible in all circumstances.



JavaScript is always available

Make sure that the content and navigation of the site can be used without JavaScript.

You can use JavaScript for nice extras, though.



JavaScript is always available

However...

Without JavaScript the page will become less user-friendly.

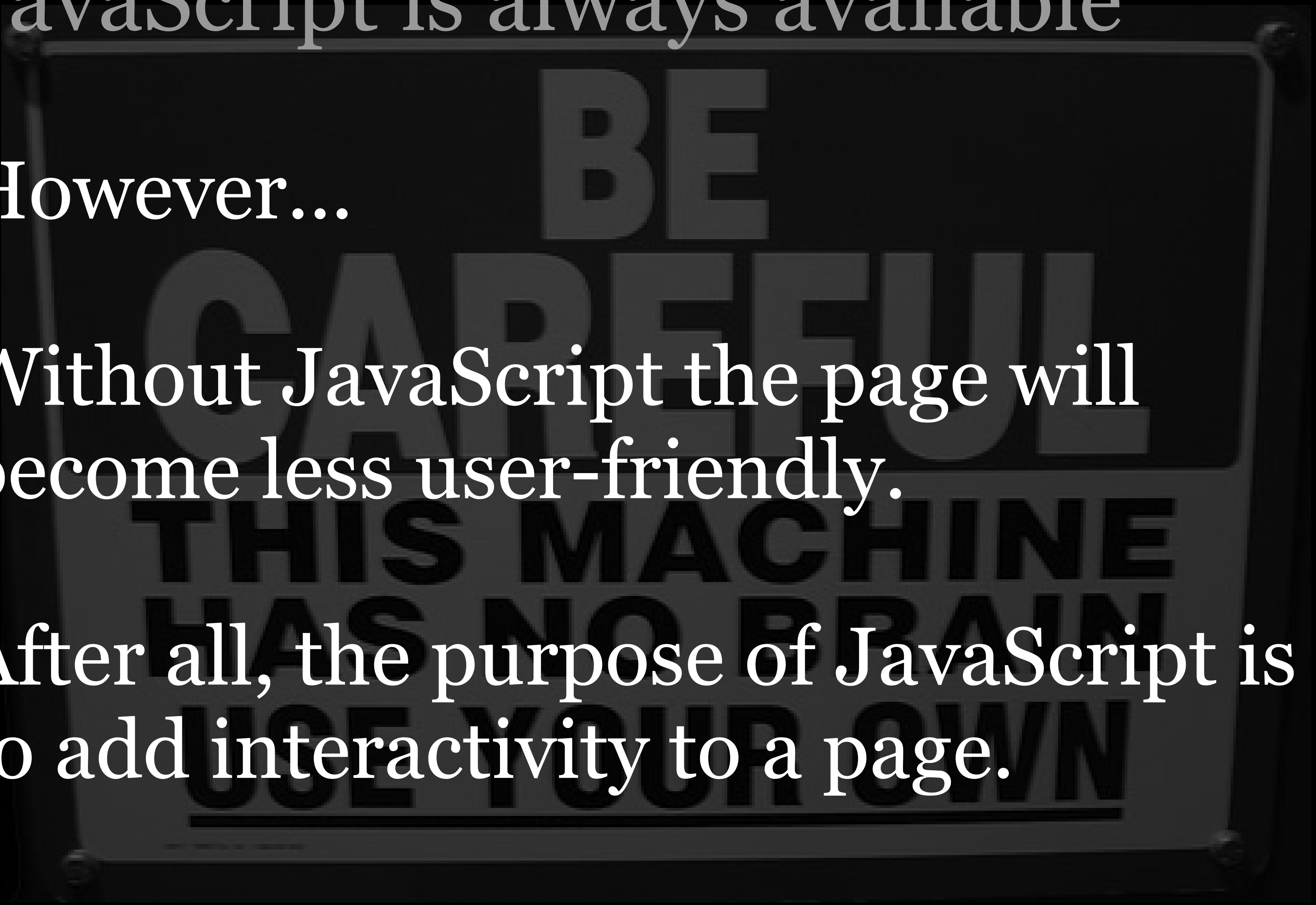
Can't be helped.

JavaScript is always available

However…

Without JavaScript the page will become less user-friendly.

After all, the purpose of JavaScript is to add interactivity to a page.

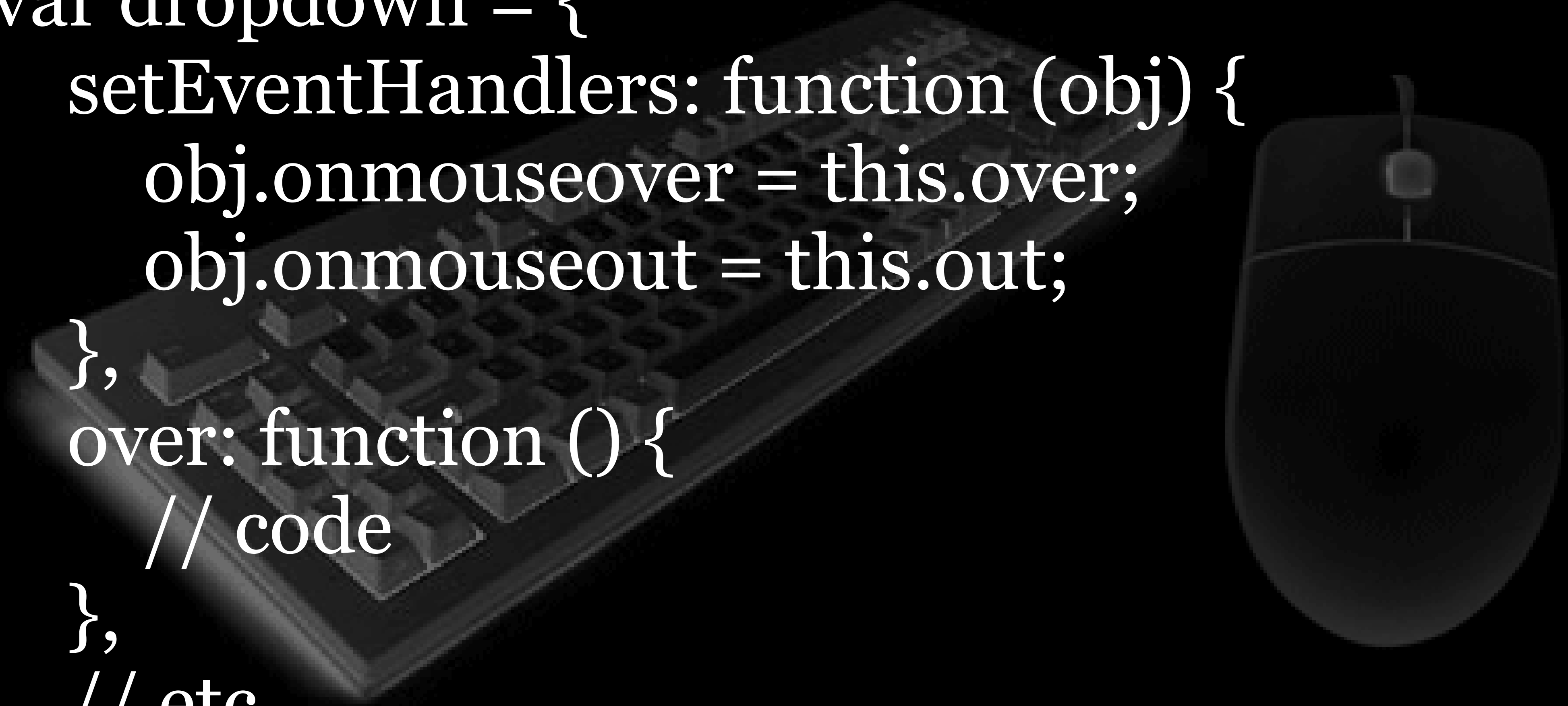


Everybody uses a mouse

Nonsense!

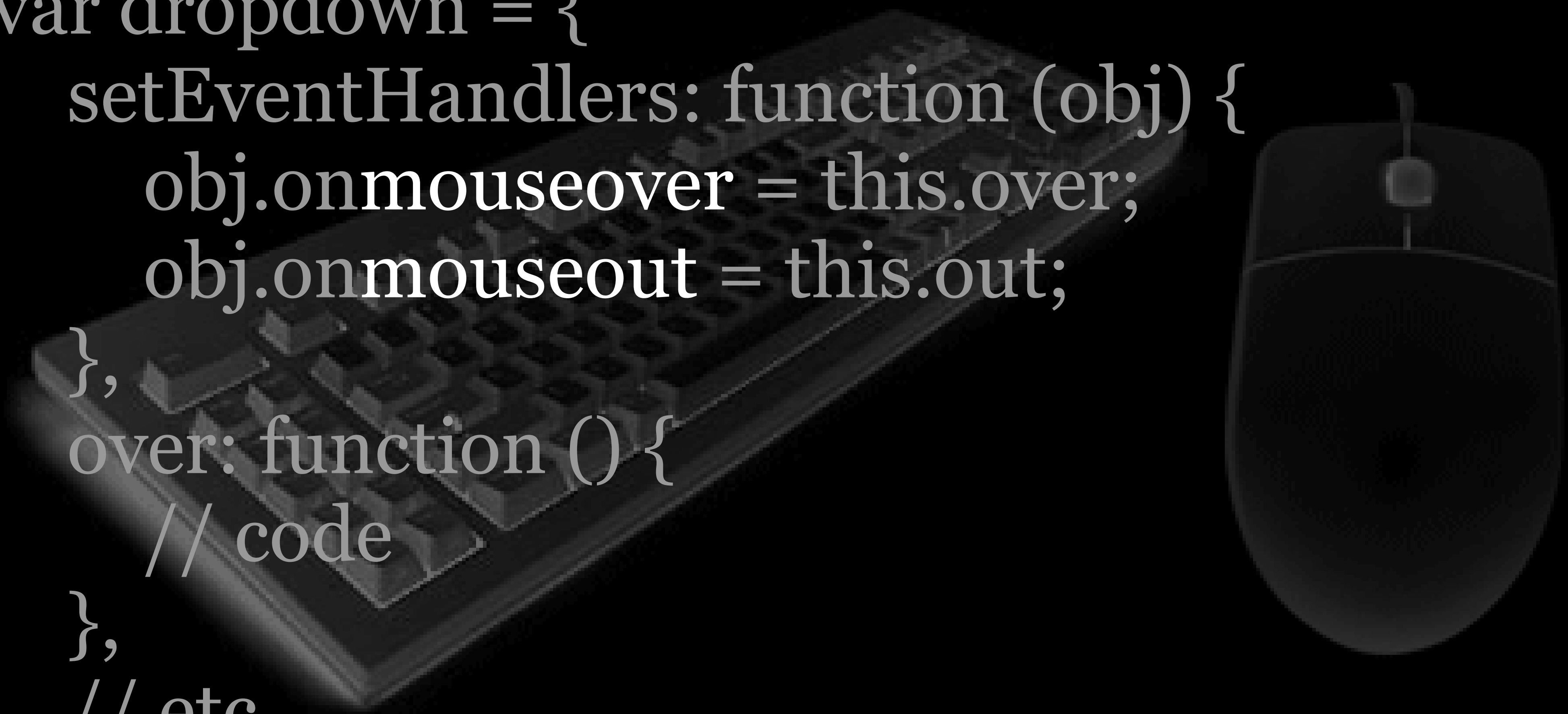
Device independence

Take a dropdown menu:



```
var dropdown = {
    setEventHandlers: function (obj) {
        obj.onmouseover = this.over;
        obj.onmouseout = this.out;
    },
    over: function () {
        // code
    },
    // etc
}
```

It doesn't work without a mouse.



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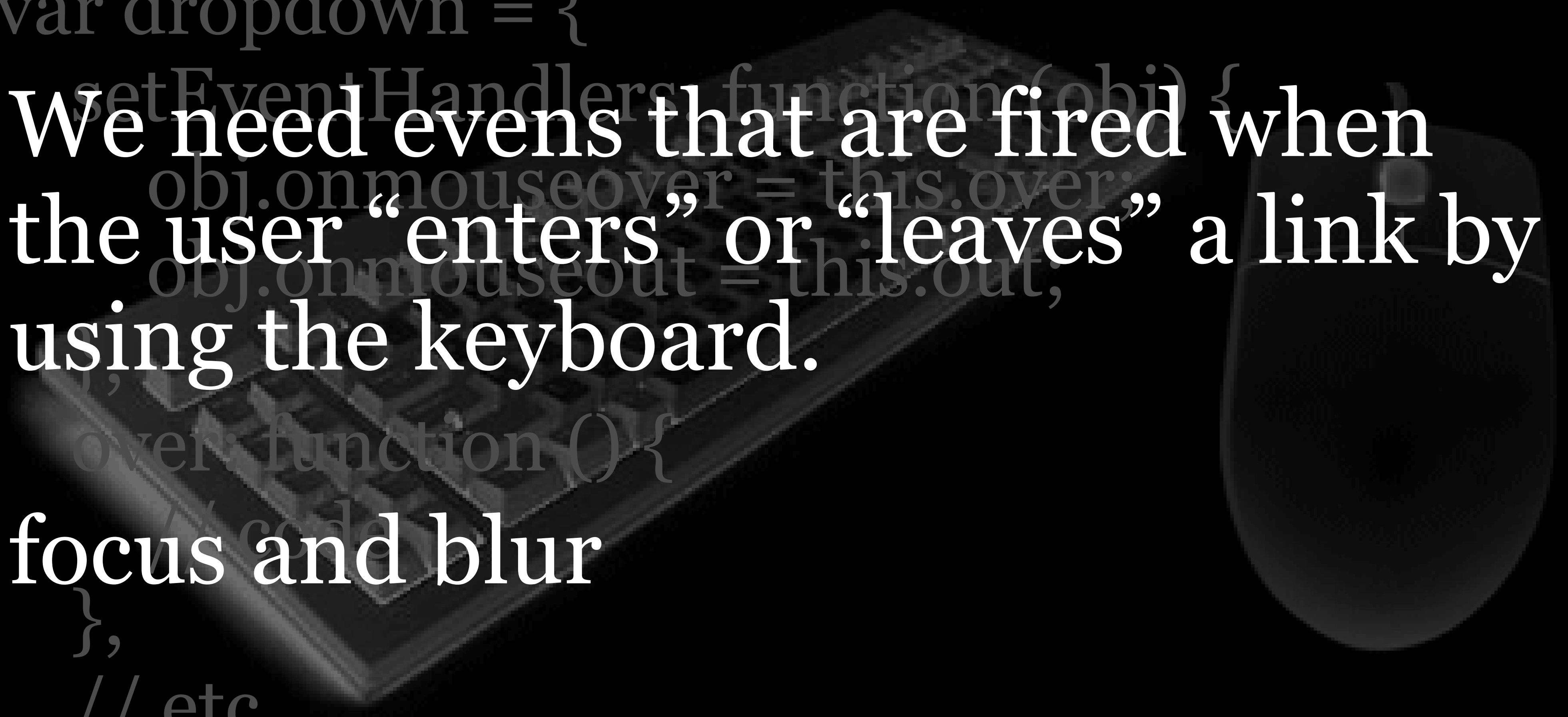
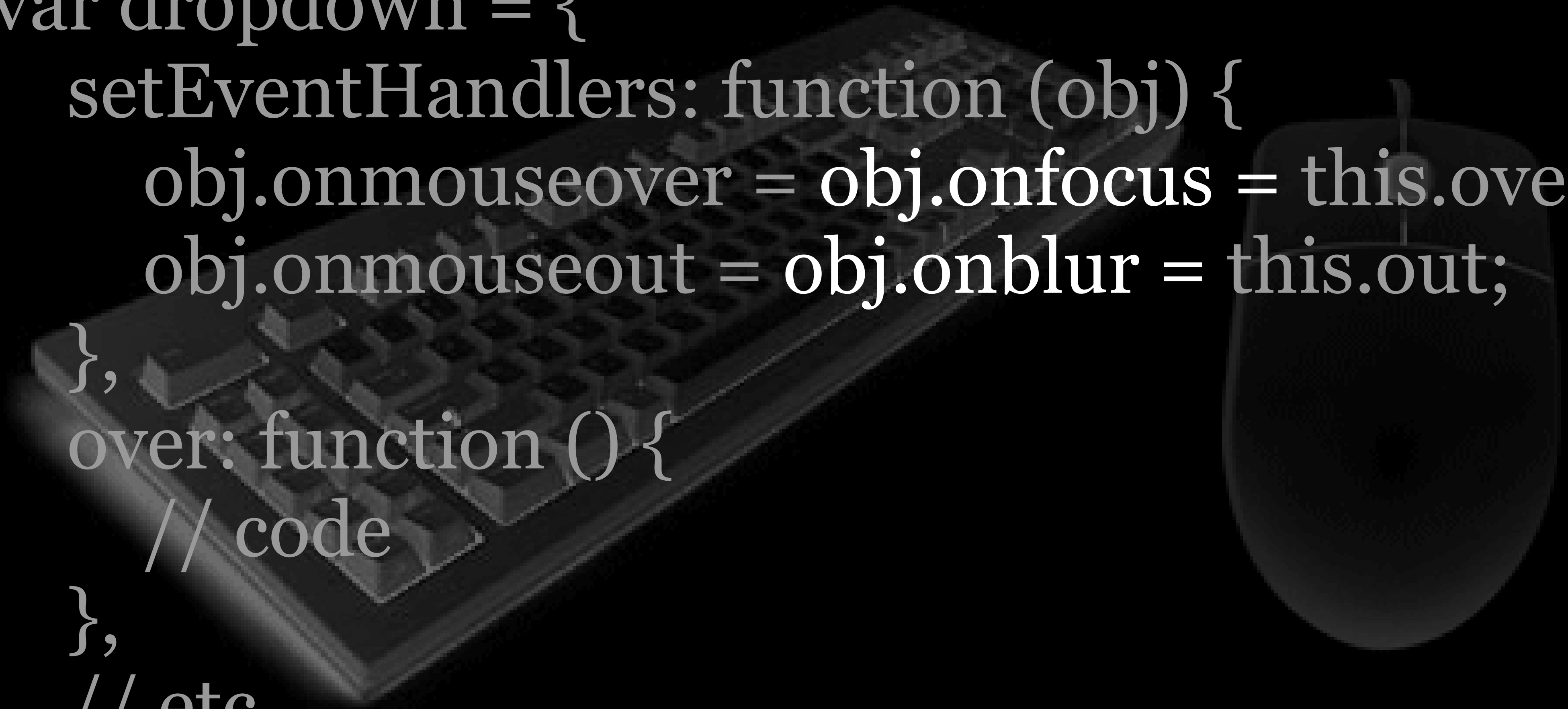


We need evens that are fired when the user “enters” or “leaves” a link by using the keyboard.

focus and blur

```
var dropdown = {
  setEventHandlers: function(obj) {
    obj.onmouseover = this.over;
    obj.onmouseout = this.out;
  },
  over: function () {
    // code
  },
  // etc
}
```



```
var dropdown = {
    setEventHandlers: function (obj) {
        obj.onmouseover = obj.onfocus = this.over;
        obj.onmouseout = obj.onblur = this.out;
    },
    over: function () {
        // code
    },
    // etc
}
```

Restriction:
the object must be able to gain the keyboard focus.

- links
- form fields

```
var dropdown = {
   setEventHandlers: function (obj) {
      obj.onmouseover = obj.onfocus = this.over;
      obj.onmouseout = obj.onblur = this.out;
   },
   over: function (){
      // code
   },
   // etc
}
```

Restriction:
the object must be able to gain the keyboard focus.

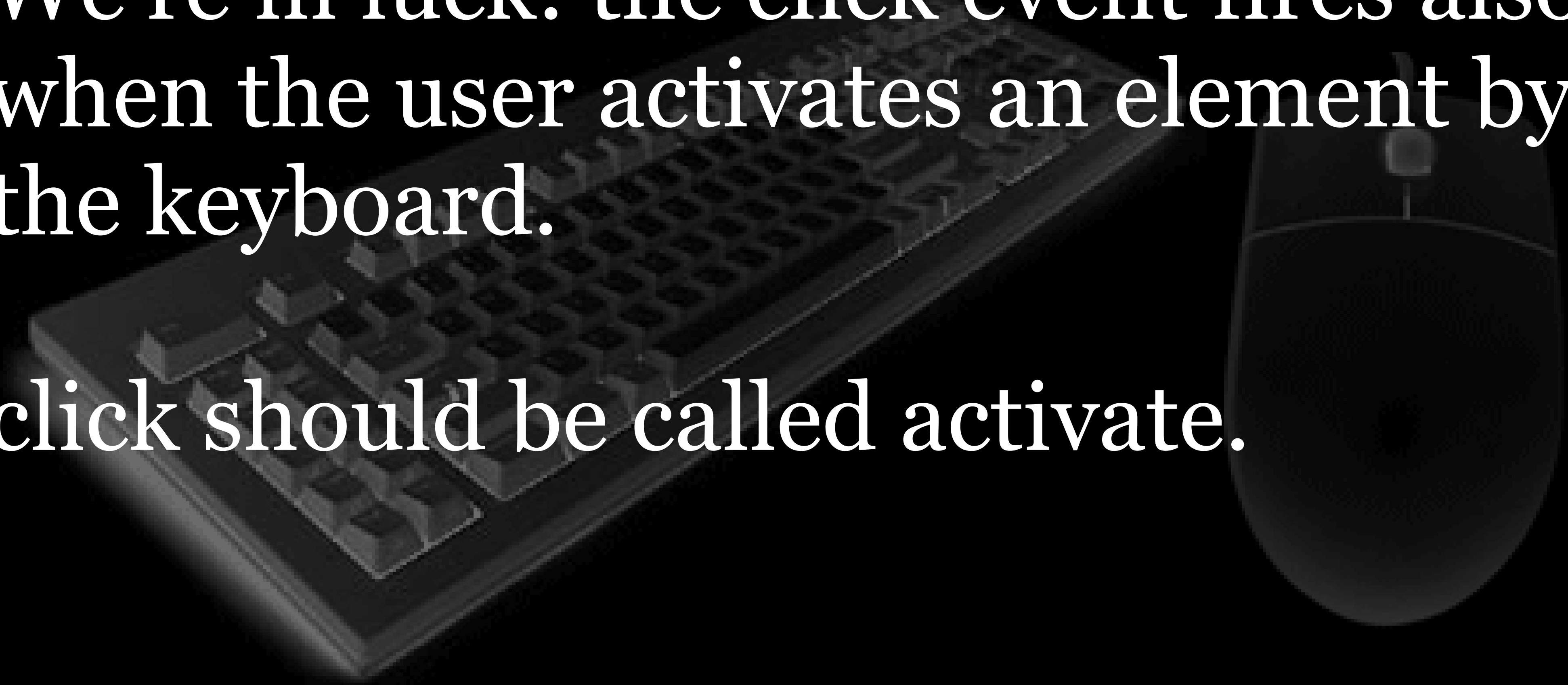
- links
- form fields
- elements with tabindex

```
var dropdown = {
   setEventHandlers: function (obj) {
      obj.onmouseover = obj.onfocus = this.over;
      obj.onmouseout = obj.onblur = this.out;
   },
   over: function () {
      // code
   },
   // etc
}
```

And what about click?

We're in luck: the click event fires also when the user activates an element by the keyboard.

click should be called activate.



Want to know more about web development techniques?

fronteers

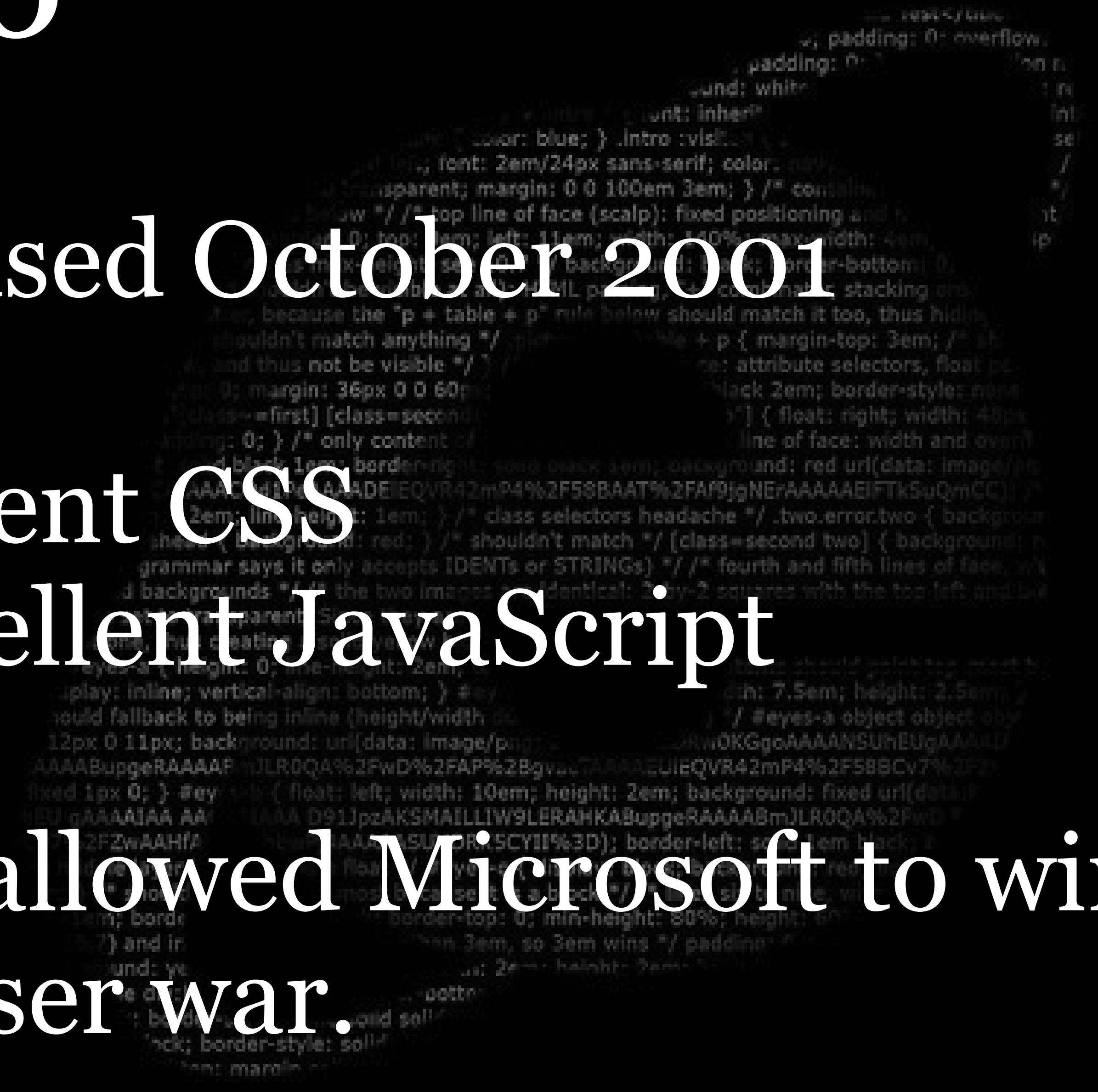
vakvereniging voor front-end developers

fronteers.nl

The organisation of web developers in Holland.
(I'm chairman)

padding: 0; overflow
padding: 0
ound: white
font: inherit
color: blue; } .intro :visited
font: 2em/24px sans-serif; color:
transparent; margin: 0 0 100em 3em; } /* contain
below */ /* top line of face (scalp): fixed positioning and
0; top: 9em; left: 11em; width: 140%; max-width: 4em;
max-height, see 10.7 */ background: black; border-bottom: 0;
shouldn't be visible at all): HTML parsing, "+" combinator, stacking order
because the "p + table + p" rule below should match it too, thus hiding
shouldn't match anything */
table + p { margin-top: 3em; /* sh
and thus not be visible */
attribute selectors, float pos
0; margin: 36px 0 0 60px
black 2em; border-style: none
[class~=first] [class=second
"] { float: right; width: 48px
0; } /* only content of
line of face: width and overfl
solid black 1em; border-right: solid black 1em; background: red url(data: image/png
AAAACQd1PeAAAADE EIEQVR42mP4%2F58BAAT%2FAf9jgNErAAAAAElFTkSuQmCC); /*
12em; line-height: 1em; } /* class selectors headache */ .two.error.two { backgrou
head { background: red; } /* shouldn't match */ [class=second two] { background: r
grammar says it only accepts IDENTs or STRINGs) */ /* fourth and fifth lines of face, wi
backgrounds */ /* the two images are identical: 2-by-2 squares with the top left and b
set to transparent. Since they are
one, thus creating a solid yellow block
eyes-a { height: 0; line-height: 2em;
display: inline; vertical-align: bottom; } #eyes
width: 7.5em; height: 2.5em;
should fallback to being inline (height/width
*/ #eyes-a object object obj
12px 0 11px; background: url(data: image/png
RwOKGgoAAAANSUhEUgAAAA
AAAABupgeRAAAABmJLR0QA%2FwD%2FAP%2BgvaeTAAAAEUlEQVR42mP4%2F58BCv7%2F
fixed 1px 0; } #eyes-b { float: left; width: 10em; height: 2em; background: fixed url(data
EU gAAAAIAA AAA AAA D91JpzAKSMAILLIW9LERAHKABupgeRAAAABmJLR0QA%2FwD
Cv7%2FZwAAHfA
wPj4AAAAASUVORK5CYII%3D); border-left: solid 1em black;
middle layer
a float */ #eyes-c { display: block; background: red; bor
/* should
most because it is a block */ /* lines six to nine, with
1em; borde
border-top: 0; min-height: 80%; height: 60
and in
than 3em, so 3em wins */ padding
und: ye
2em; height: 2em;
se div:h
bottom
border-style: solid solid
black; border-style: solid
margin

IE 6

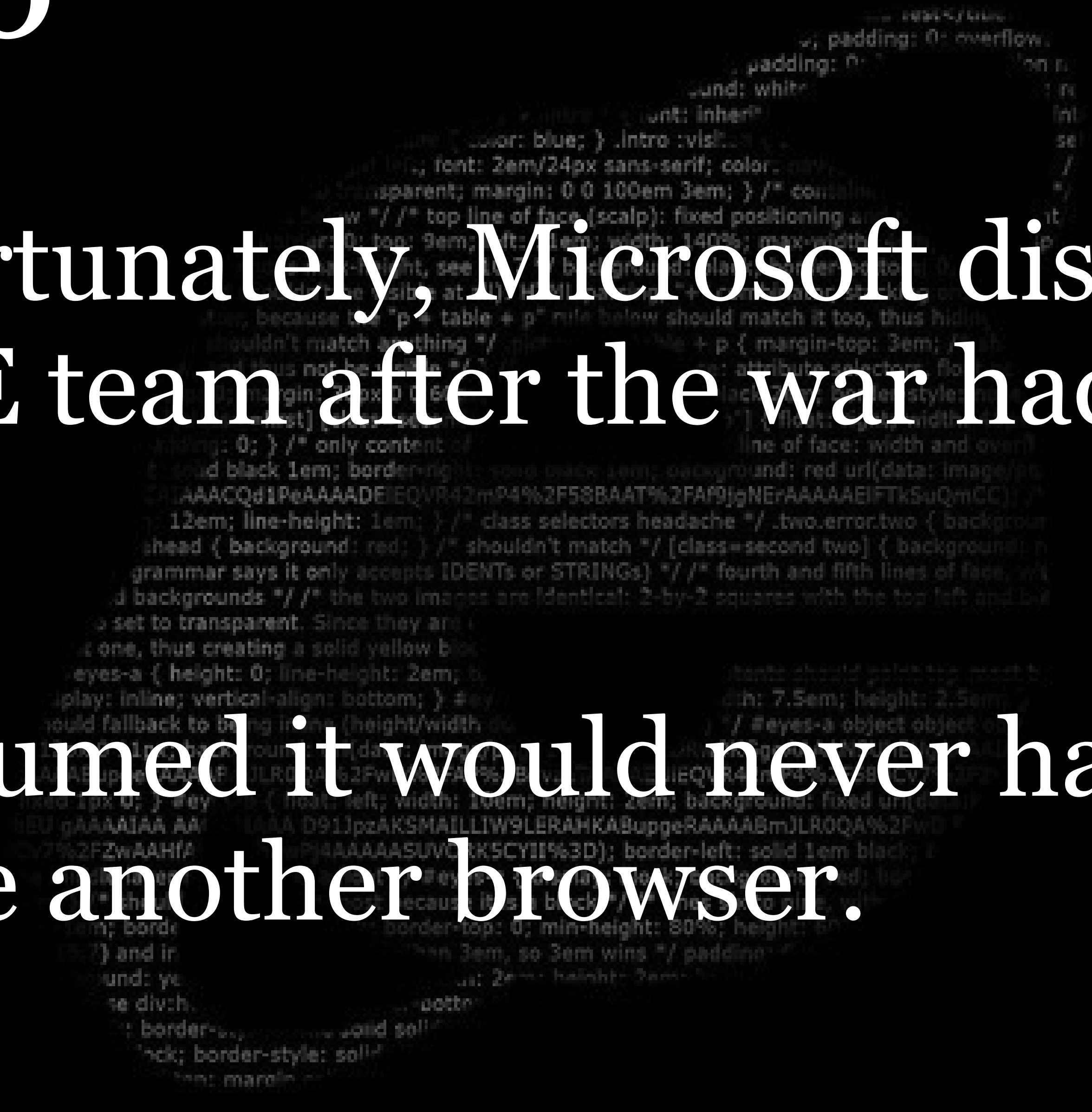


Released October 2001

- Decent CSS
- Excellent JavaScript

This allowed Microsoft to win the browser war.

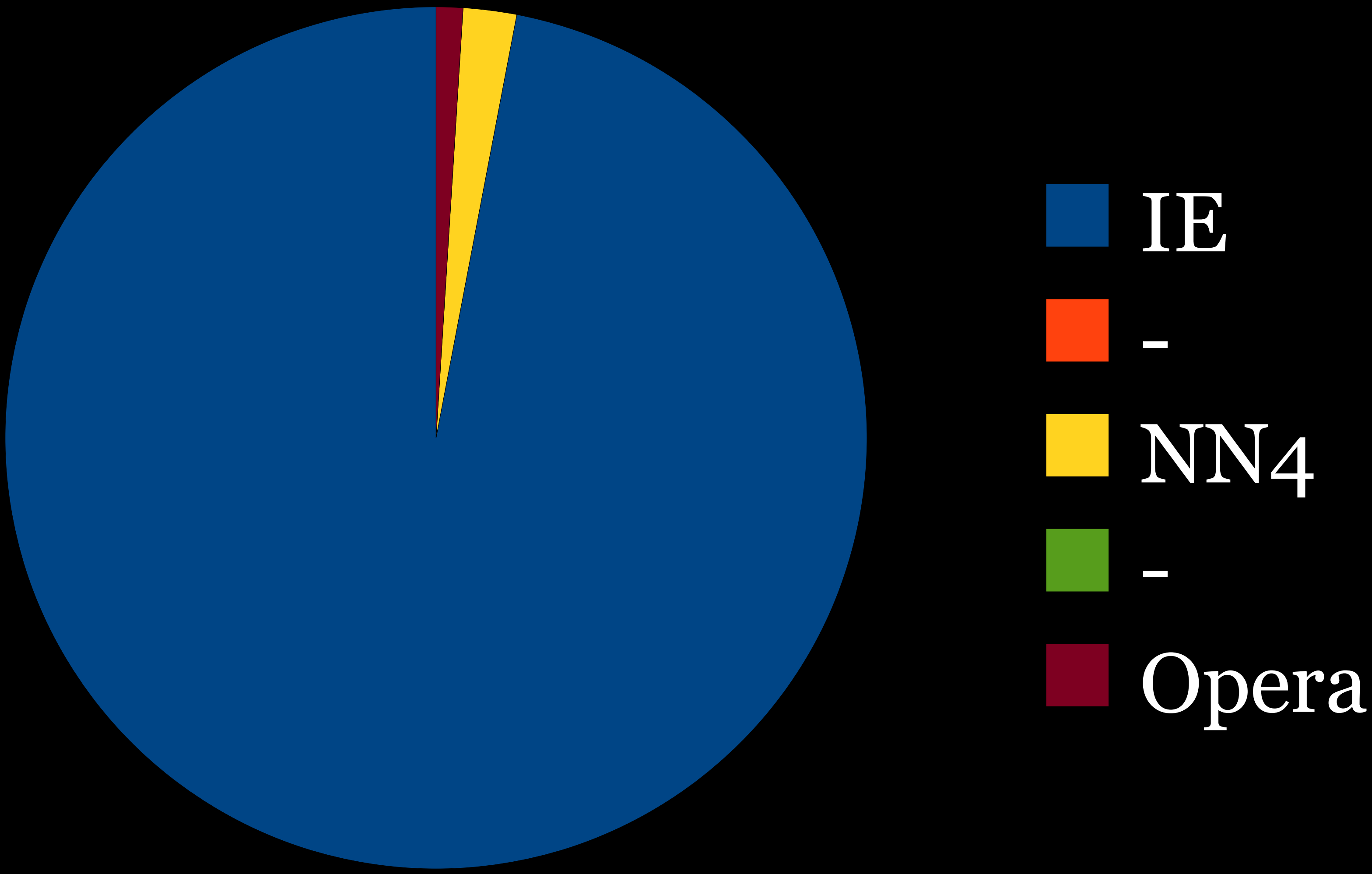
IE 6



Unfortunately, Microsoft disbanded the IE team after the war had been won.

It assumed it would never have to create another browser.

The browser market back then

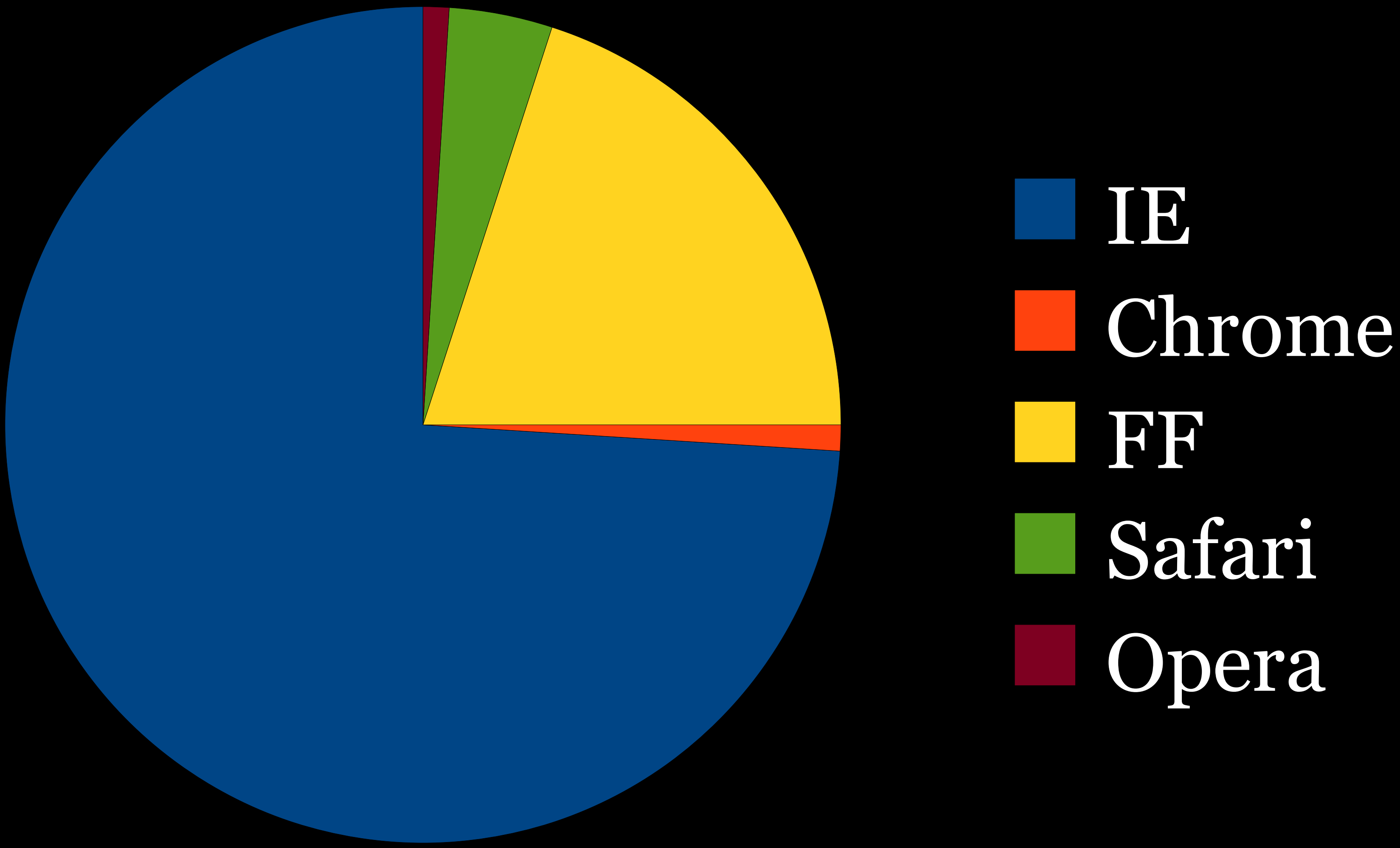


IE 6

Meanwhile, competition on the browser market has returned.

- Mozilla -> Firefox
- Safari (Apple)
- Opera
- more recently Google Chrome

The current browser market



IE 6

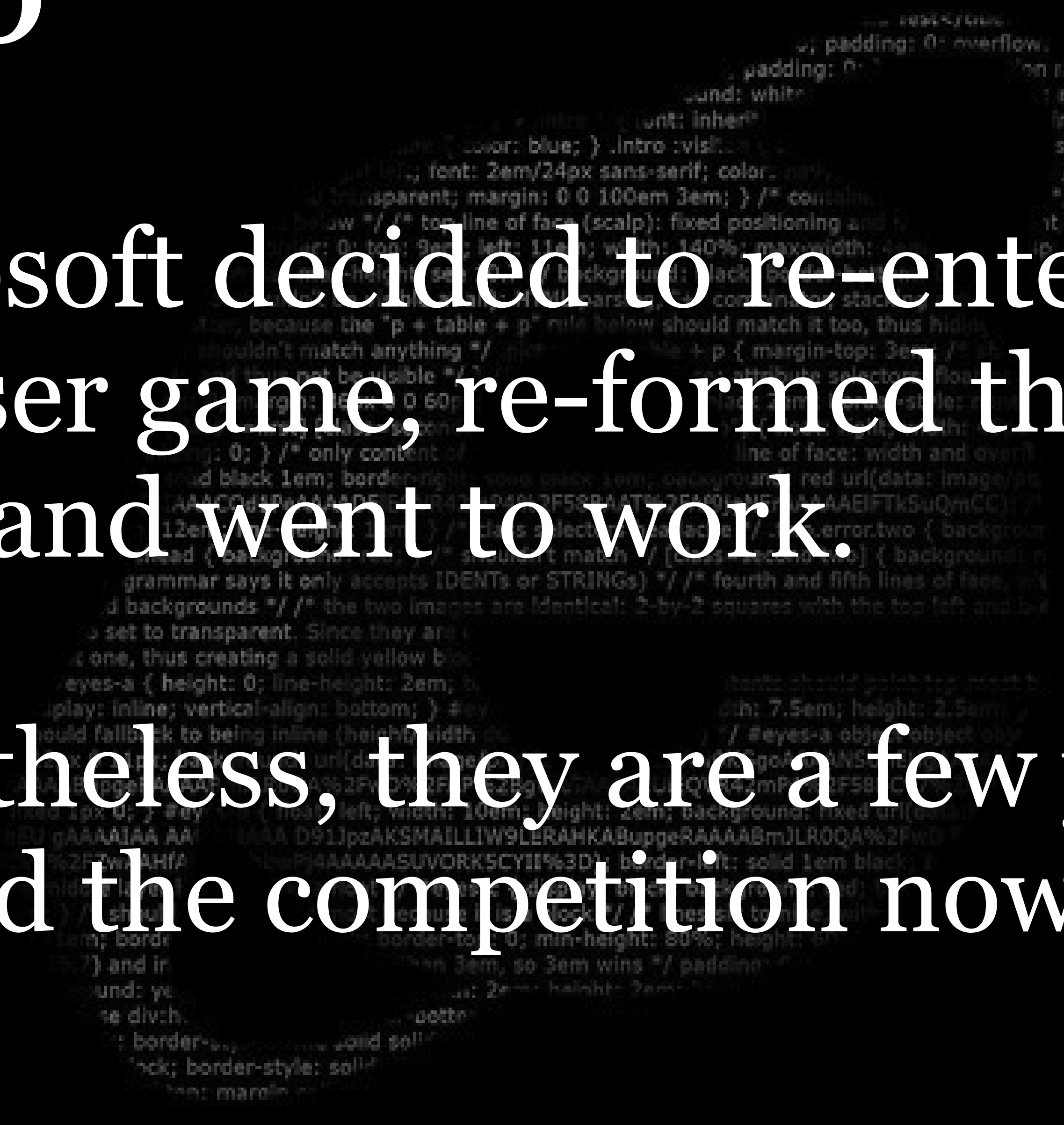
The problem is that all other browsers supported JavaScript and especially CSS better than IE.

Web developers started to get fed up with IE6.

IE 6

Microsoft decided to re-enter the browser game, re-formed the IE team and went to work.

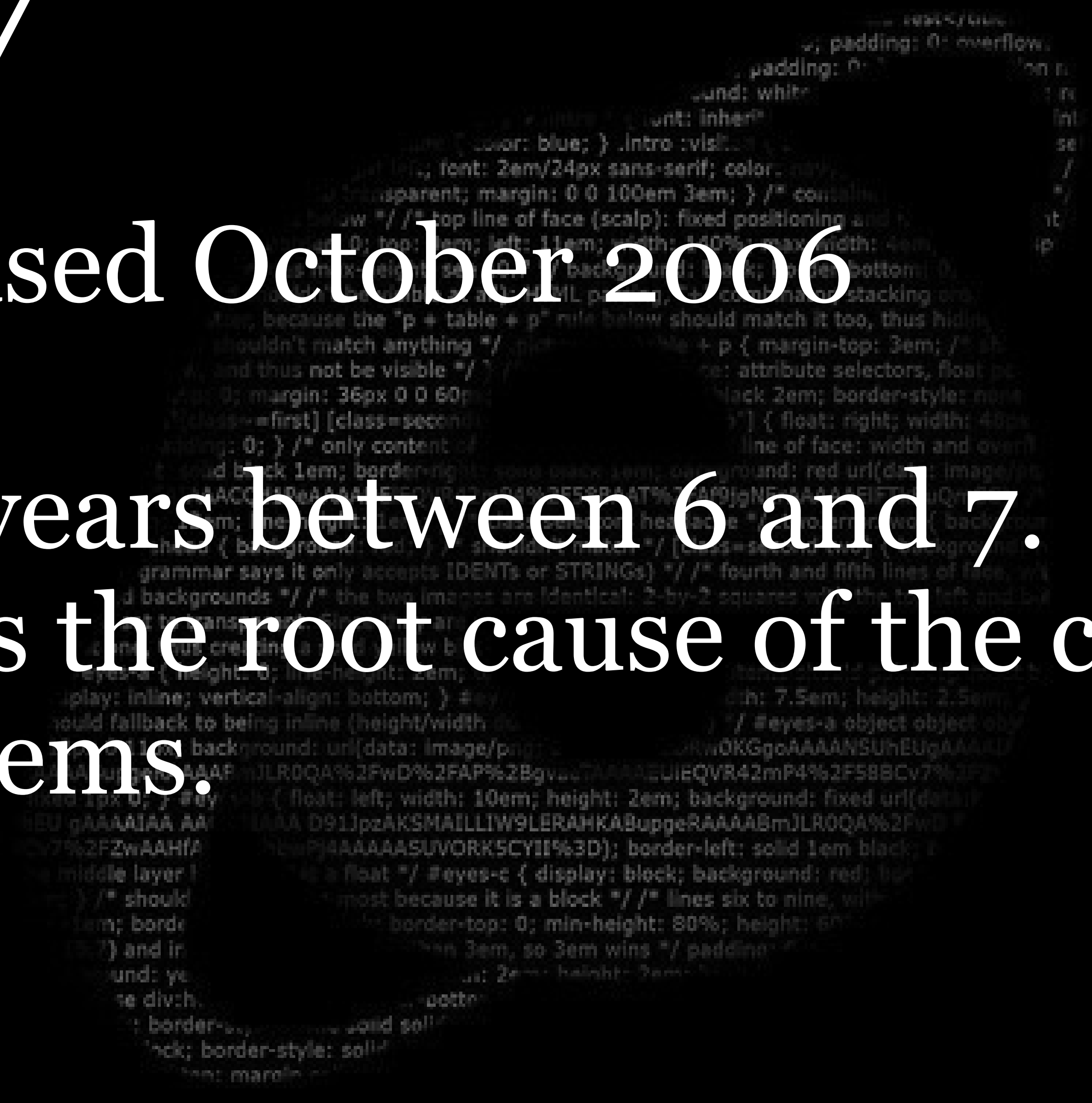
Nonetheless, they are a few years behind the competition now.



IE 6

Released October 2001

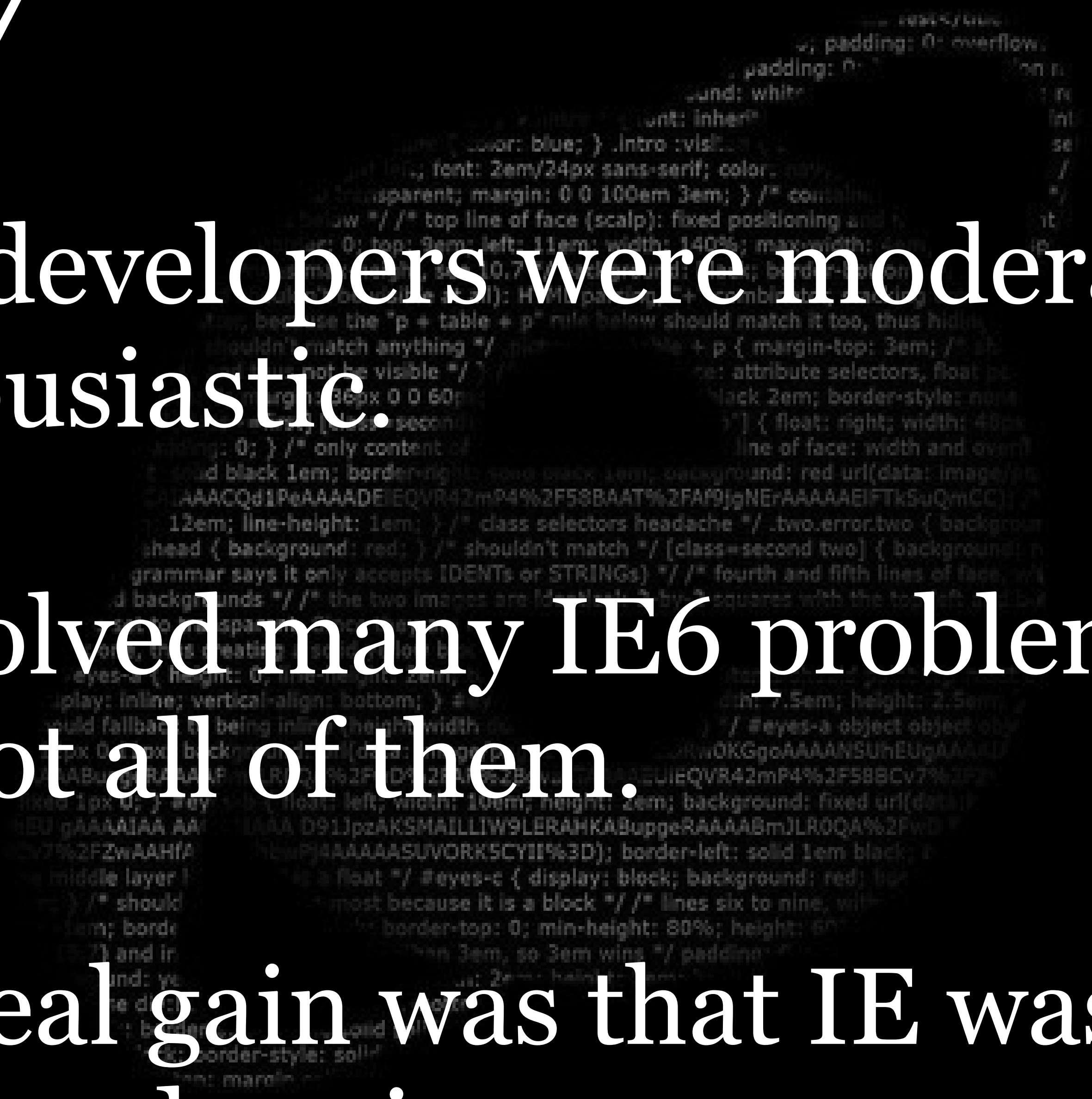
IE 7



Released October 2006

Five years between 6 and 7.
That's the root cause of the current problems.

IE 7

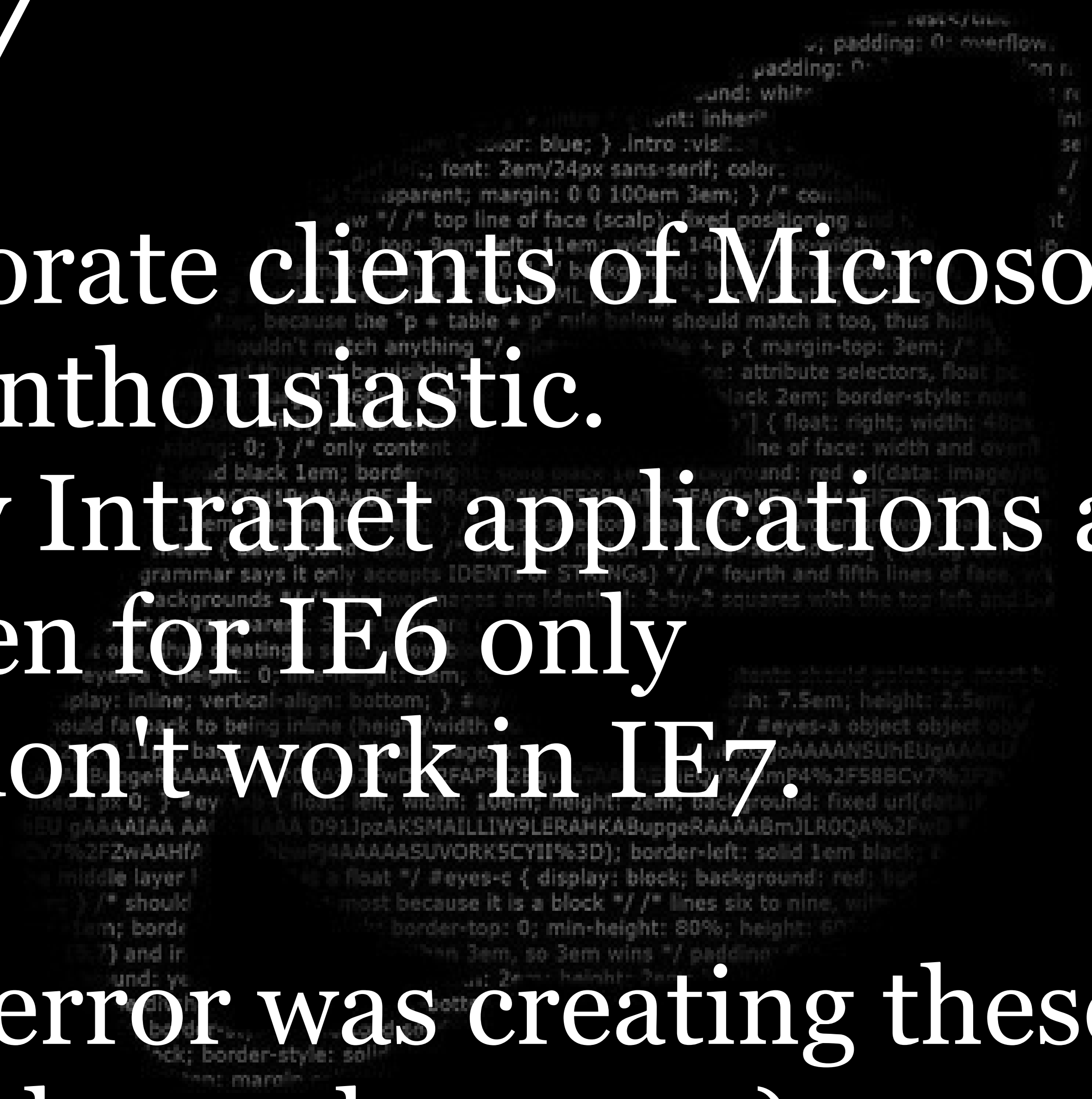


Web developers were moderately enthousiastic.

IE7 solved many IE6 problems but not all of them.

The real gain was that IE was being improved again.

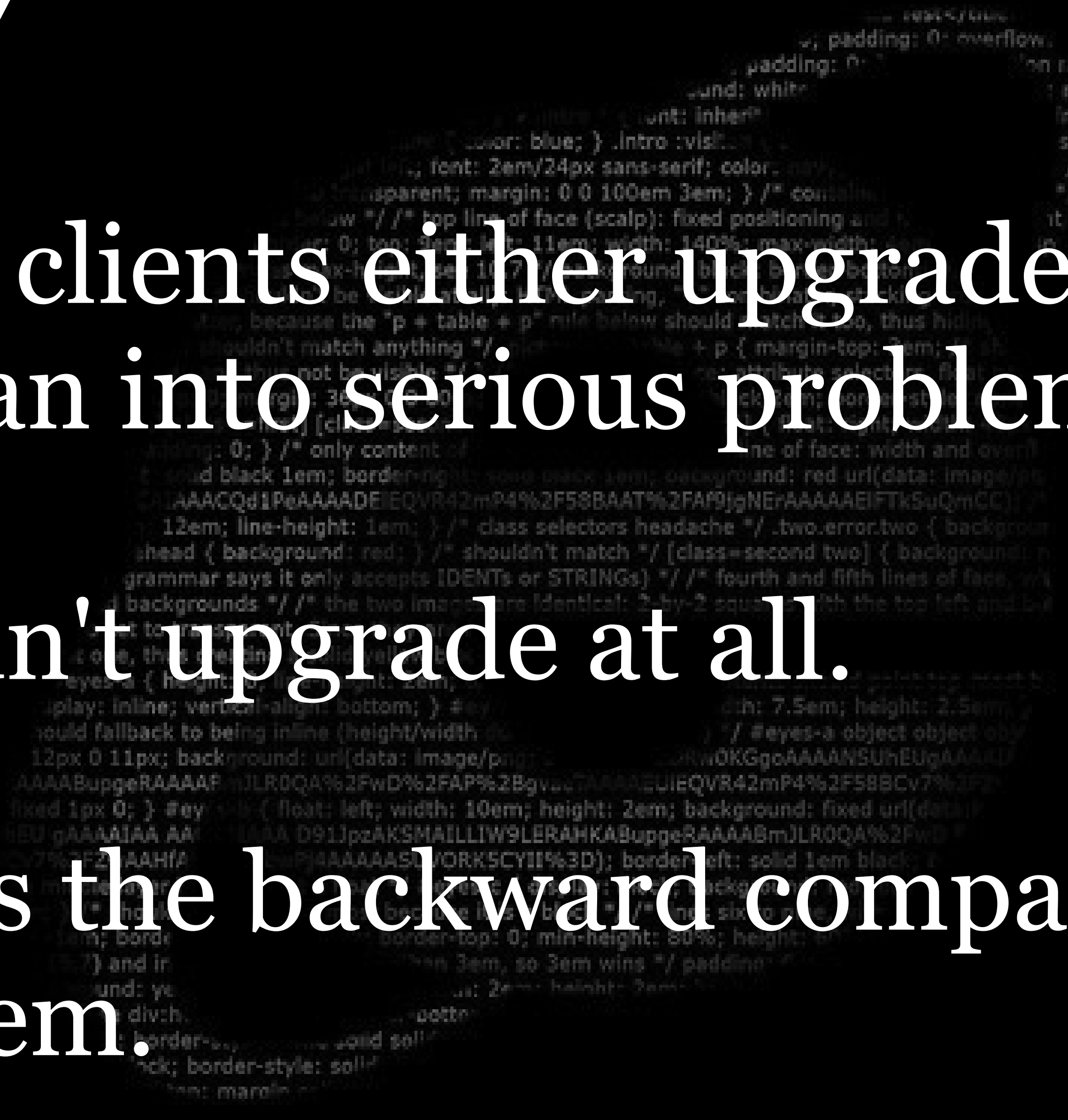
IE 7



Corporate clients of Microsoft were less enthousiastic.
Many Intranet applications are written for IE6 only
and don't work in IE7.

(The error was creating these apps for only one browser.)

IE 7

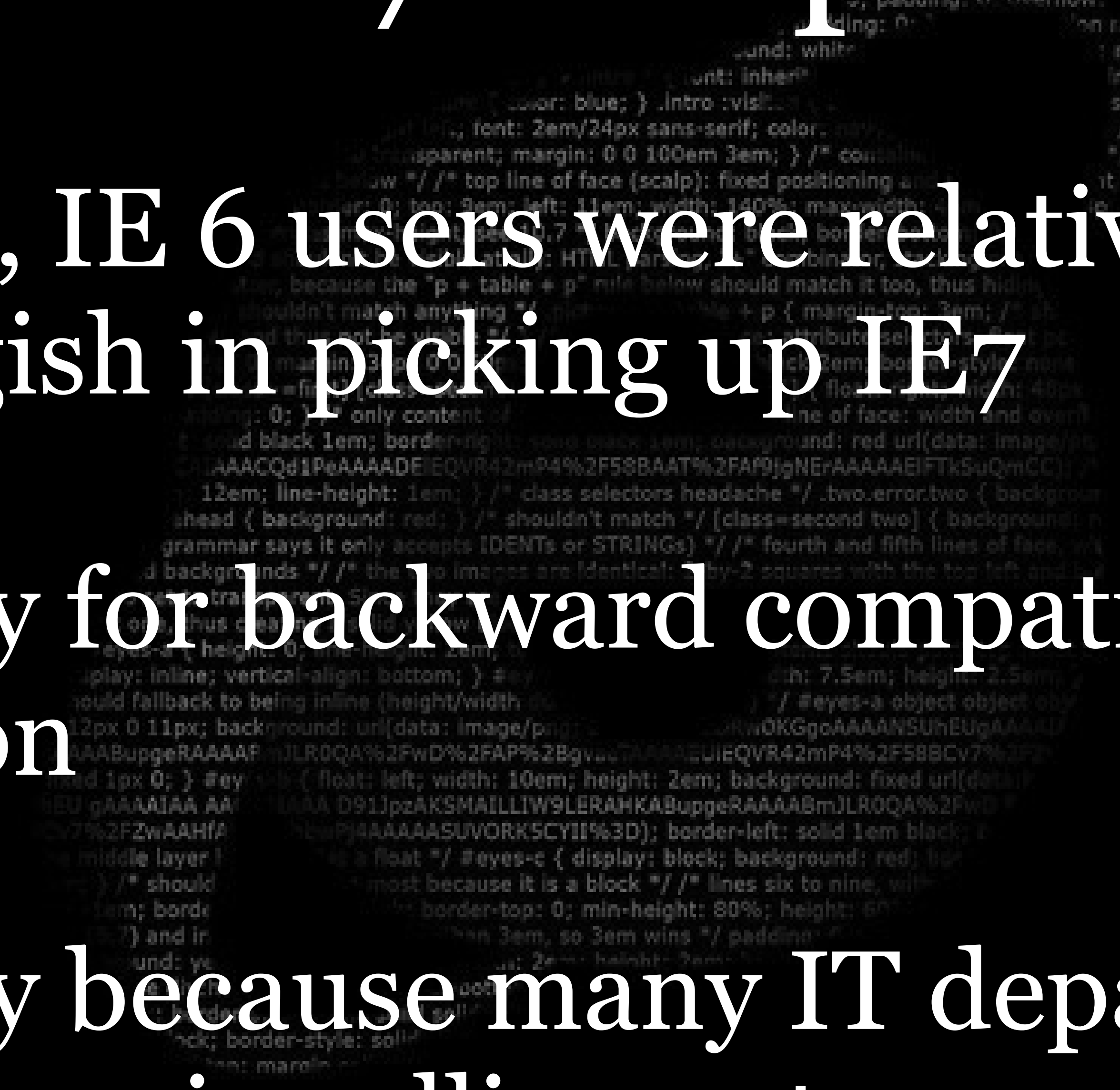


Thus, clients either upgraded to IE7 and ran into serious problems

or didn't upgrade at all.

This is the backward compatibility problem.

IE 6 -> 7 adoption

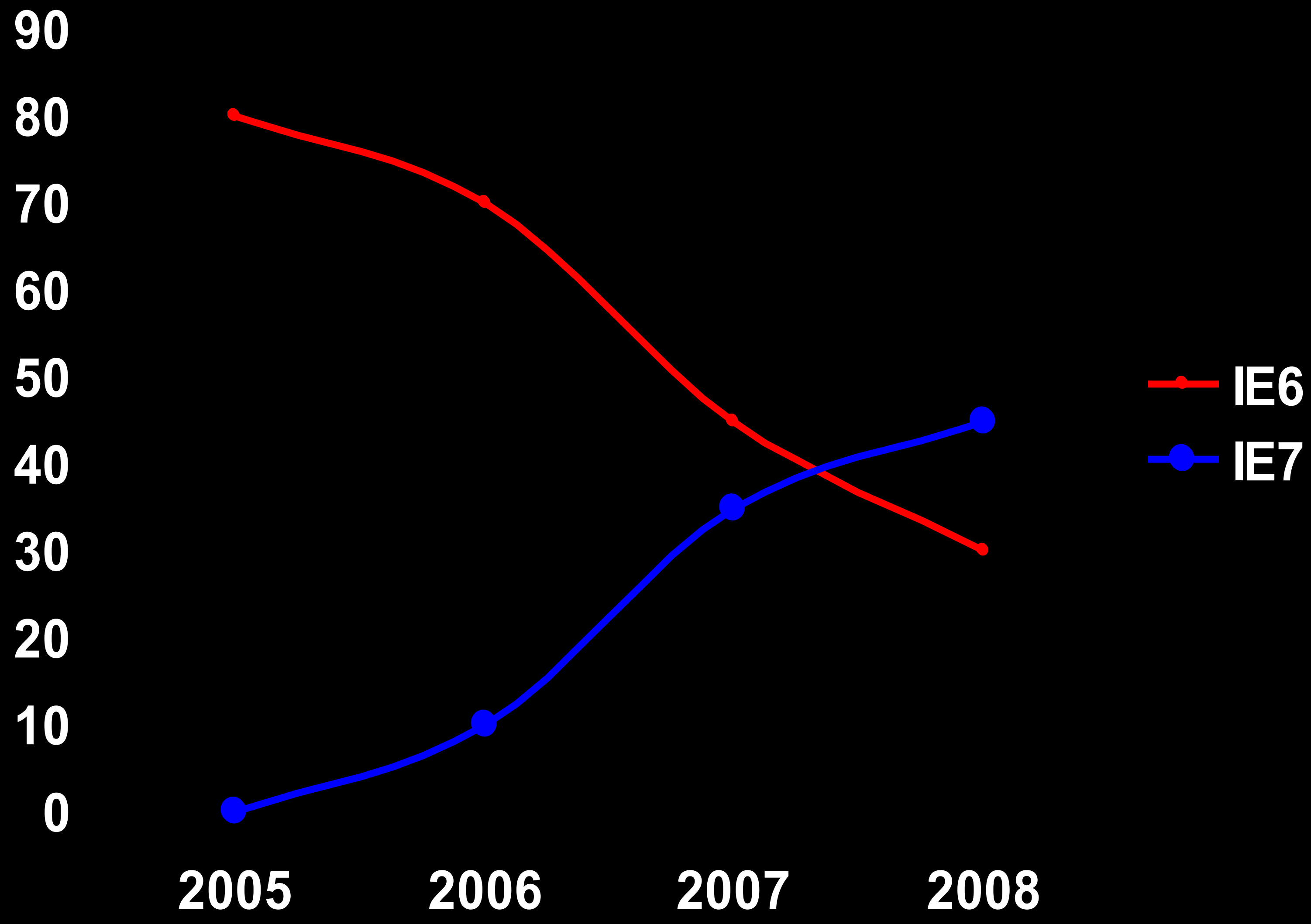


Thus, IE 6 users were relatively sluggish in picking up IE7

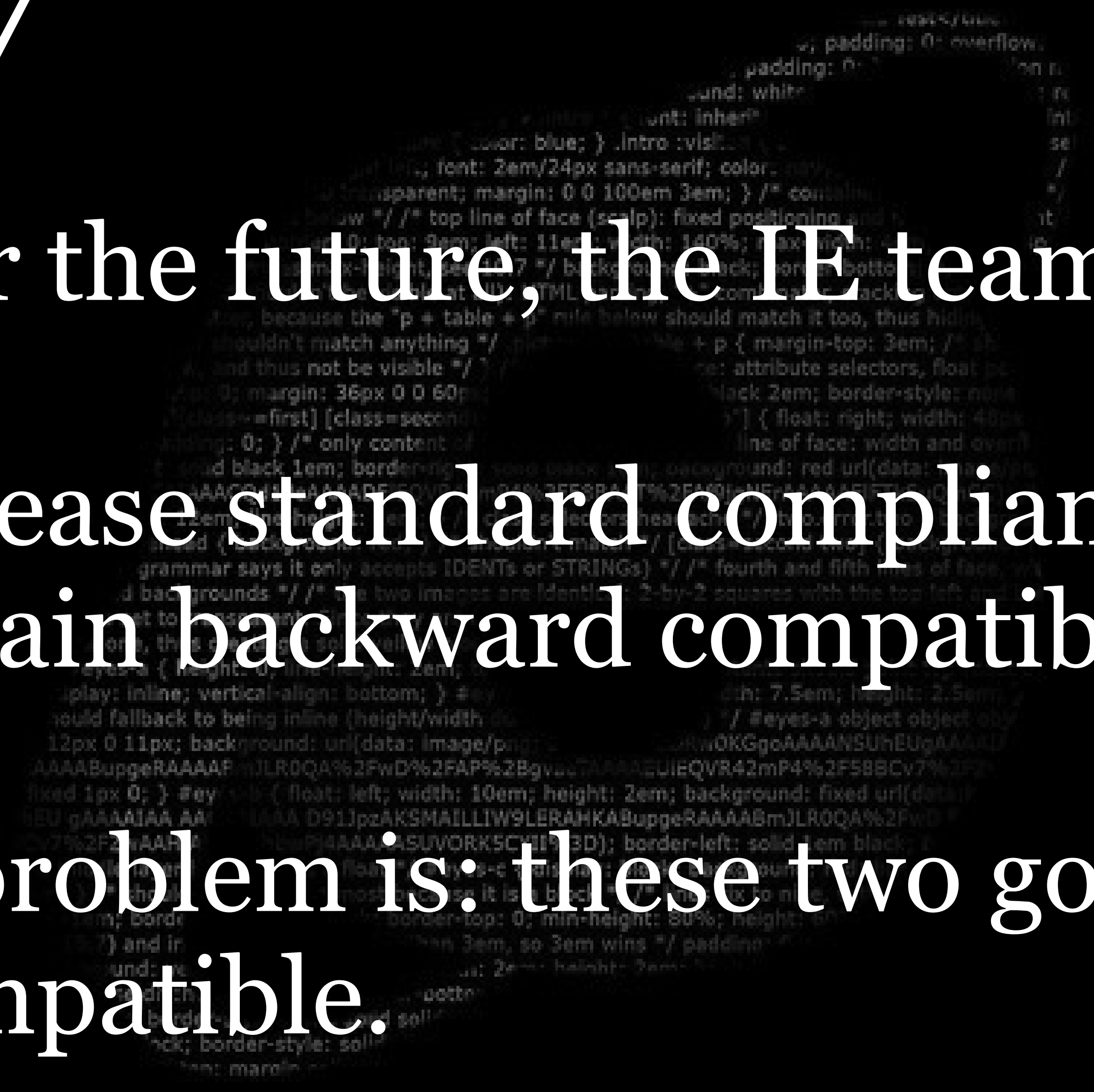
partly for backward compatibility reason

partly because many IT departments are slow in rolling out new software

IE 6 -> 7 adoption



IE 7



So for the future, the IE team had to

- increase standard compliance
- remain backward compatible

The problem is: these two goals are incompatible.

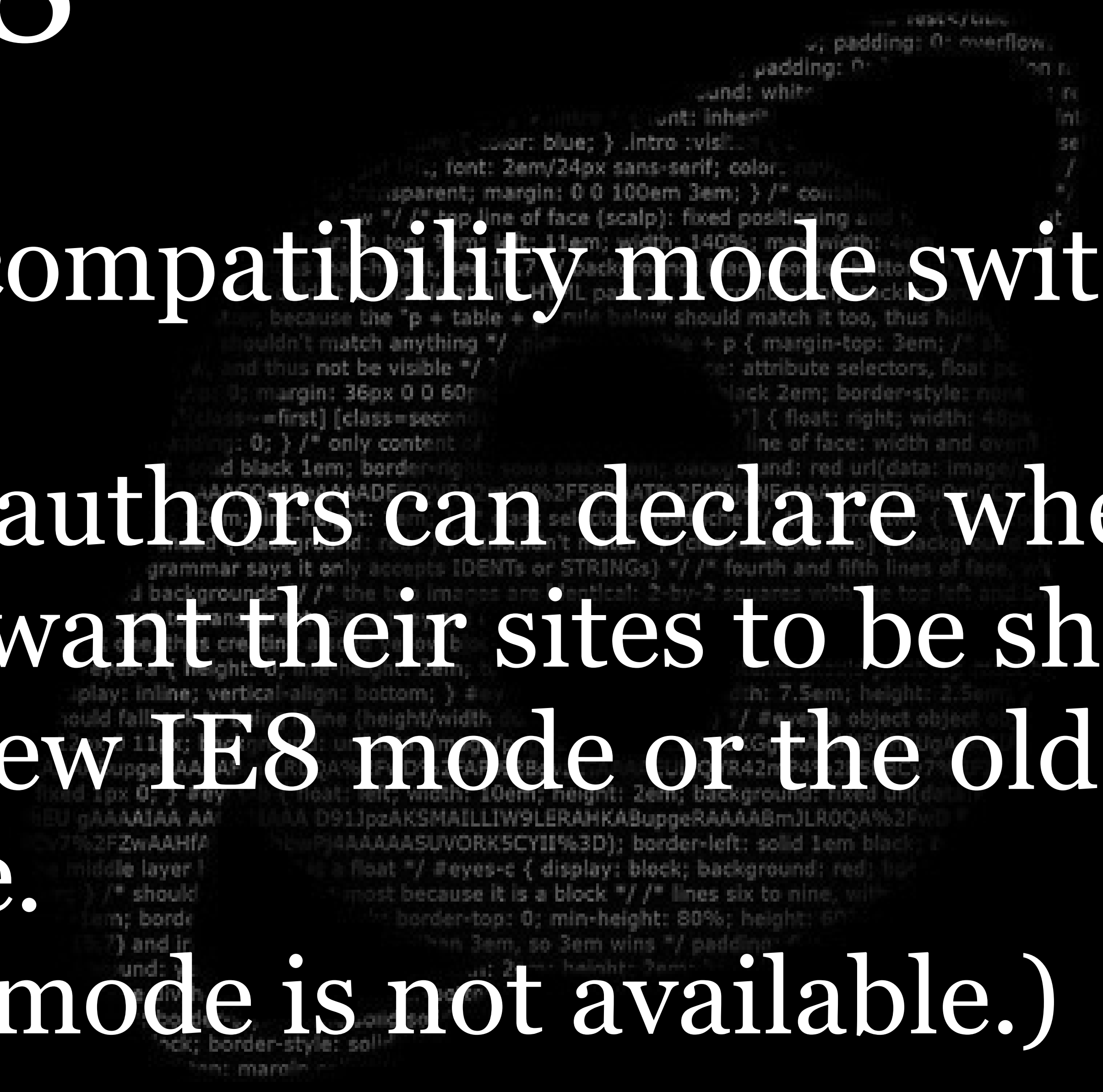
IE 8

Released March 2009

Standard compliance has been improved dramatically. (full CSS 2)

It is also backward compatible with IE7.

IE 8

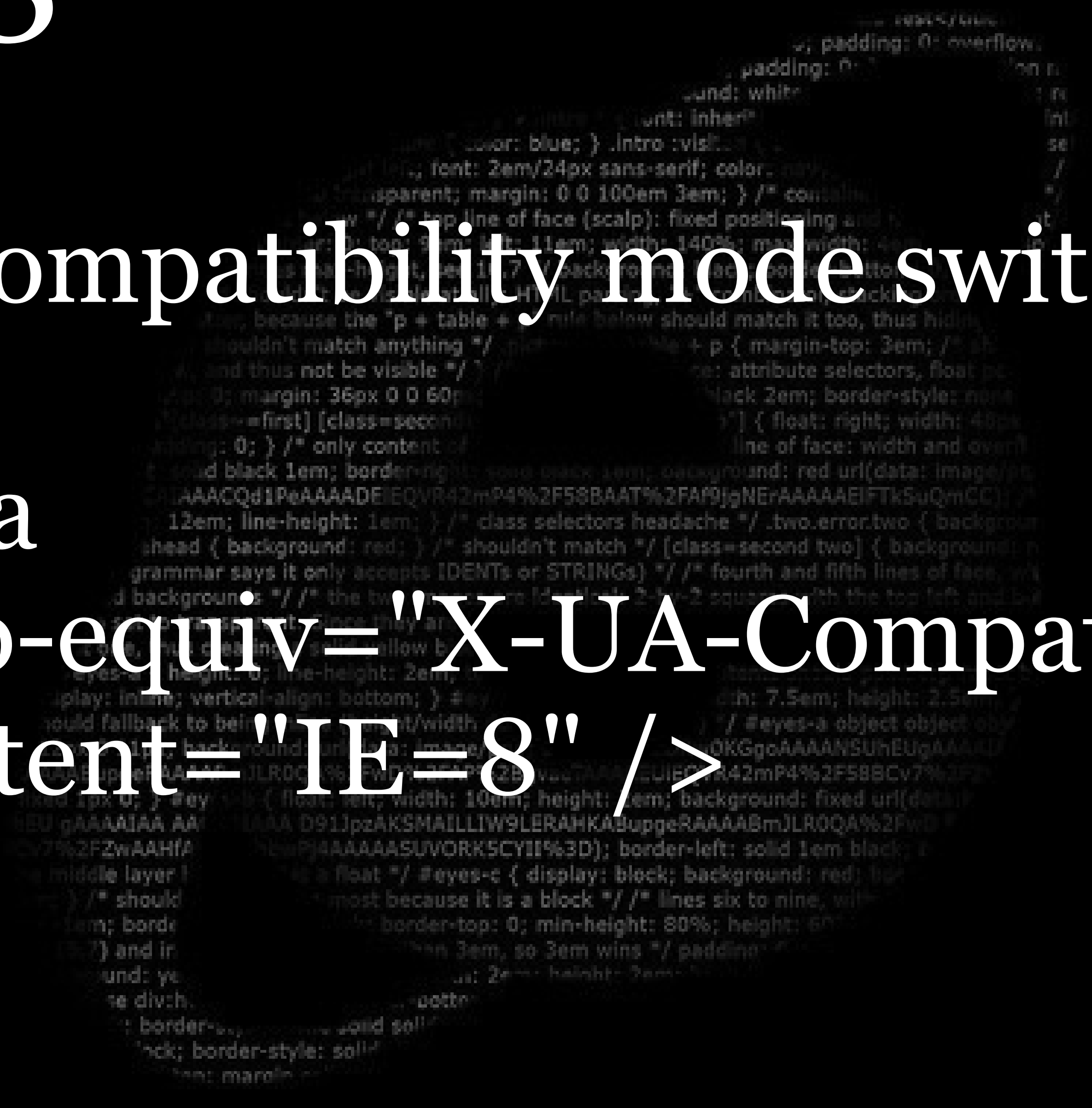


The compatibility mode switch

Web authors can declare whether they want their sites to be shown in the new IE8 mode or the old IE7 mode.
(IE6 mode is not available.)

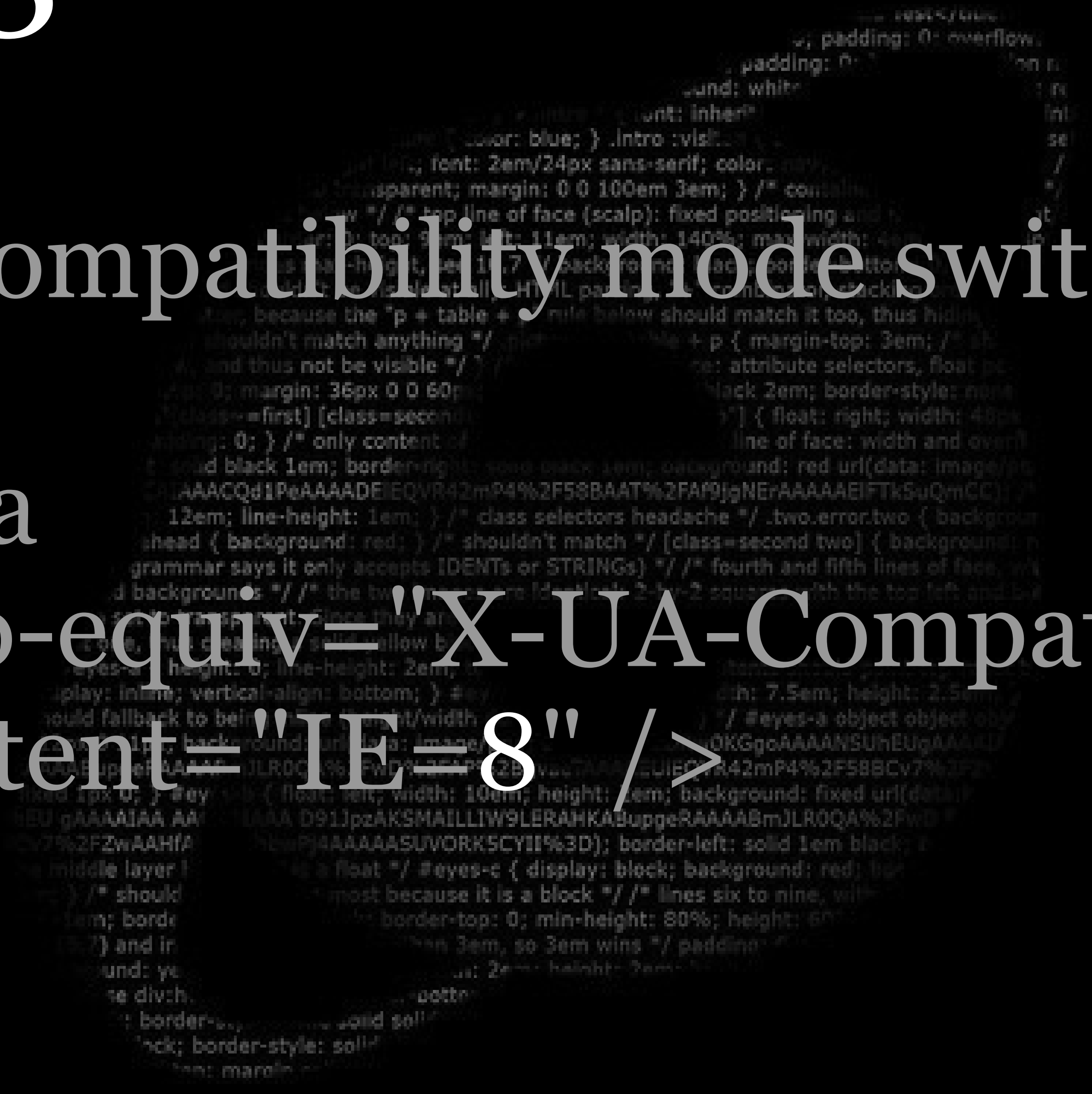
IE 8

The compatibility mode switch



```
<meta
  http-equiv="X-UA-Compatible"
  content="IE=8" />
```

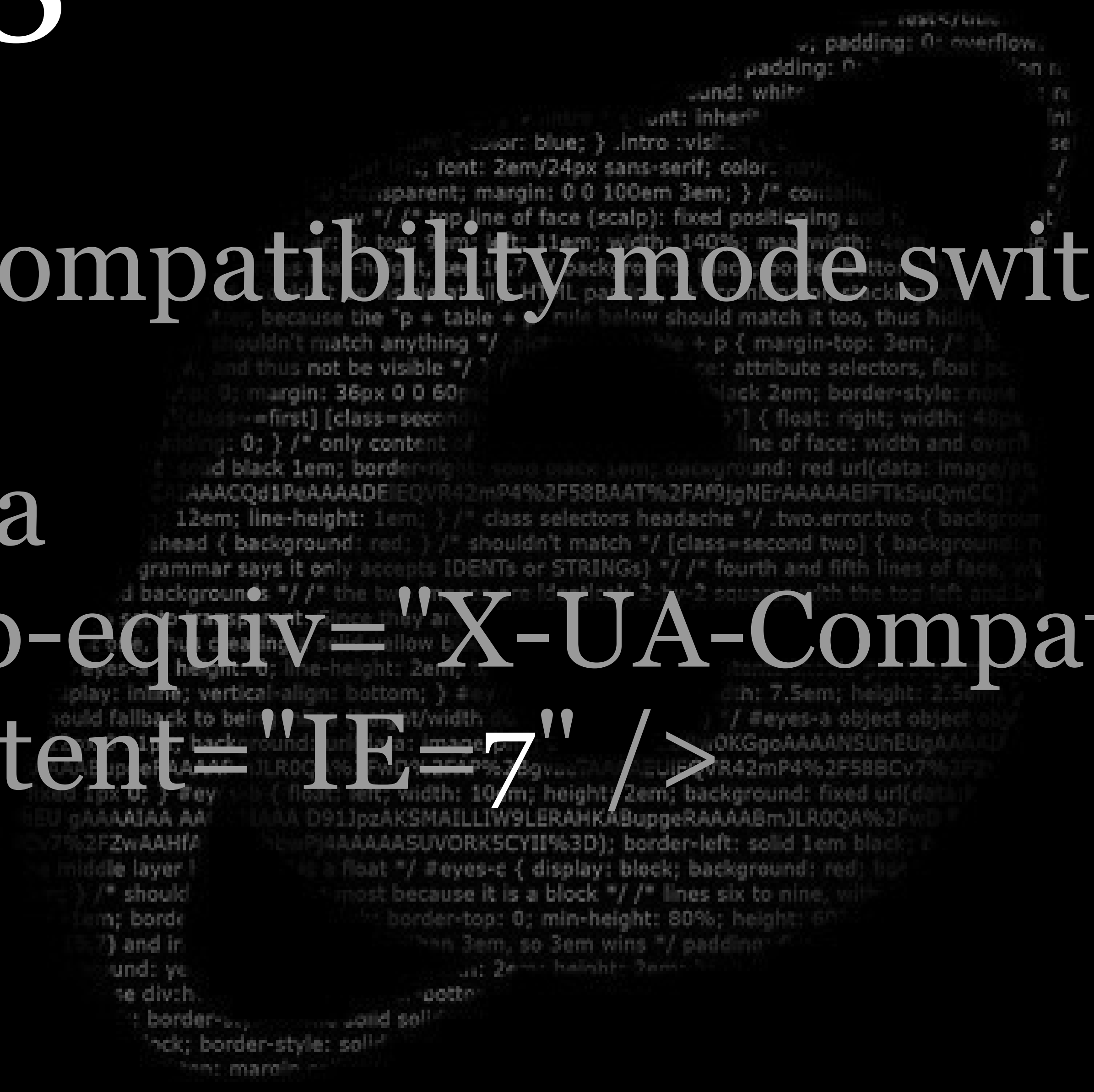
IE 8



The compatibility mode switch

```
<meta
  http-equiv="X-UA-Compatible"
  content="IE=8" />
```

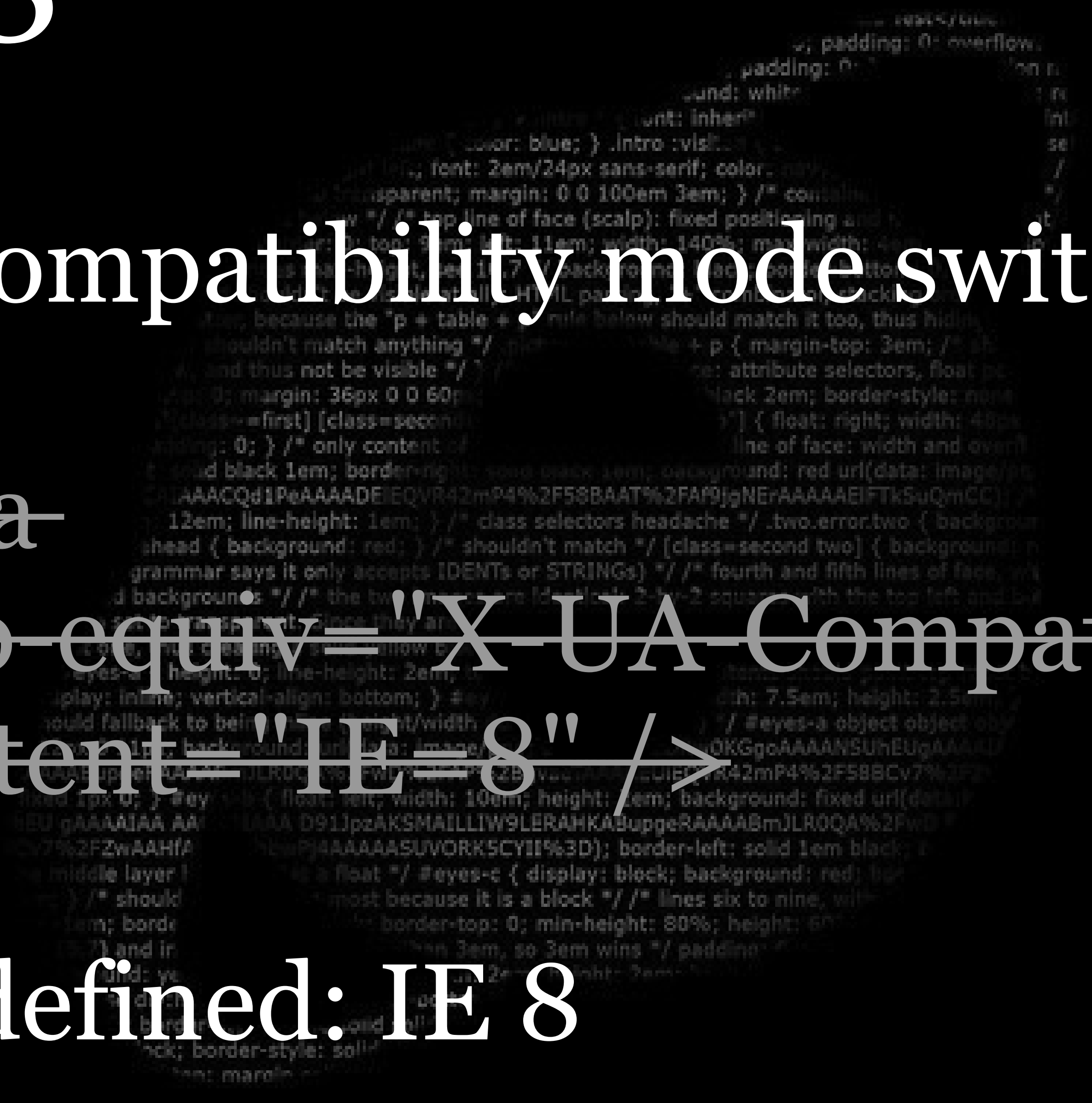
IE 8



The compatibility mode switch

```
<meta
  http-equiv="X-UA-Compatible"
  content="IE=7" />
```

IE 8



The compatibility mode switch

~~<meta~~
~~http-equiv="X-UA-Compatible"~~
~~content="IE=8" />~~

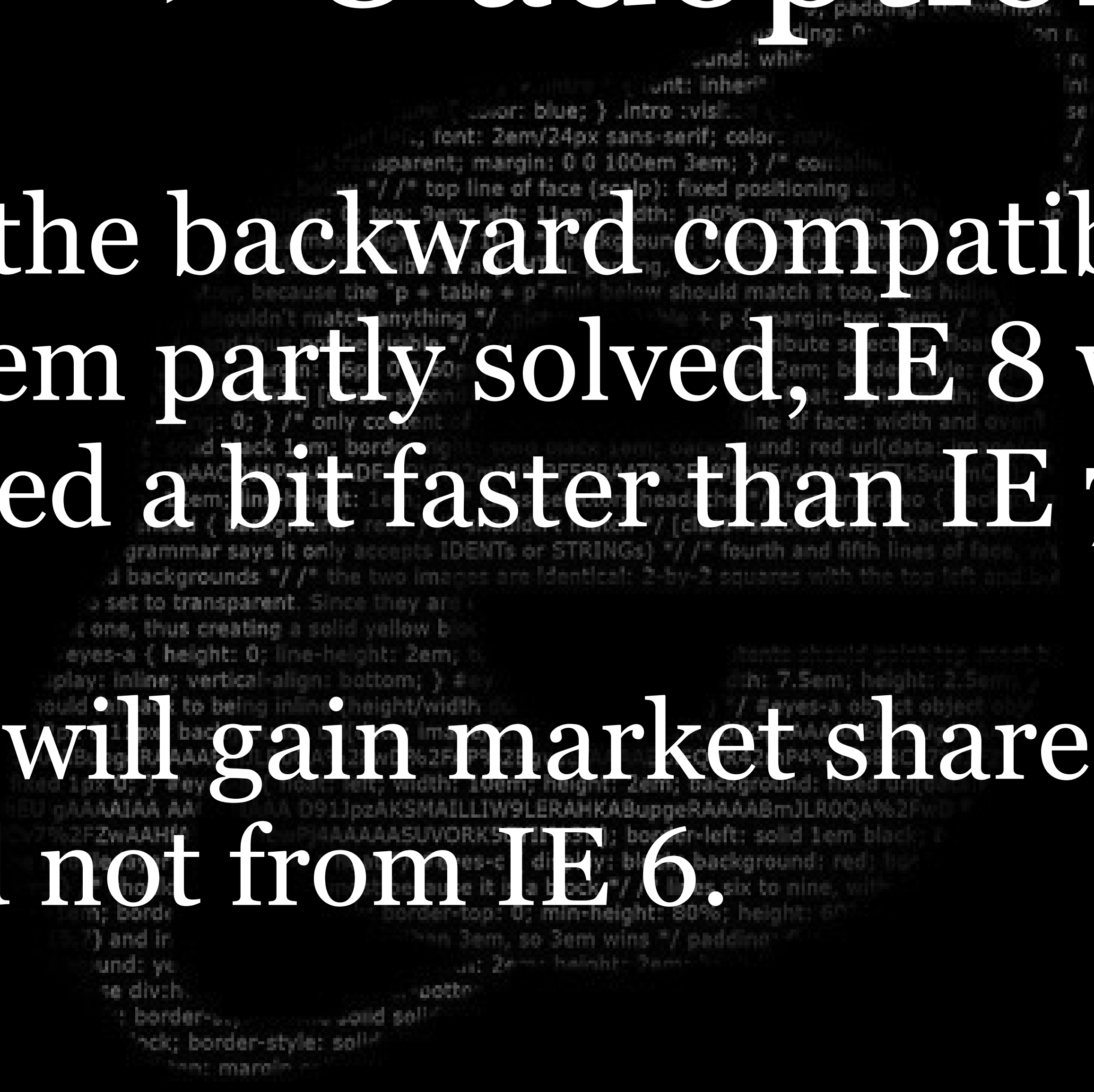
If undefined: IE 8

IE 8

Thus, web developers can use the enhanced standard compliance of IE8

or opt to keep their site frozen in IE7 mode.

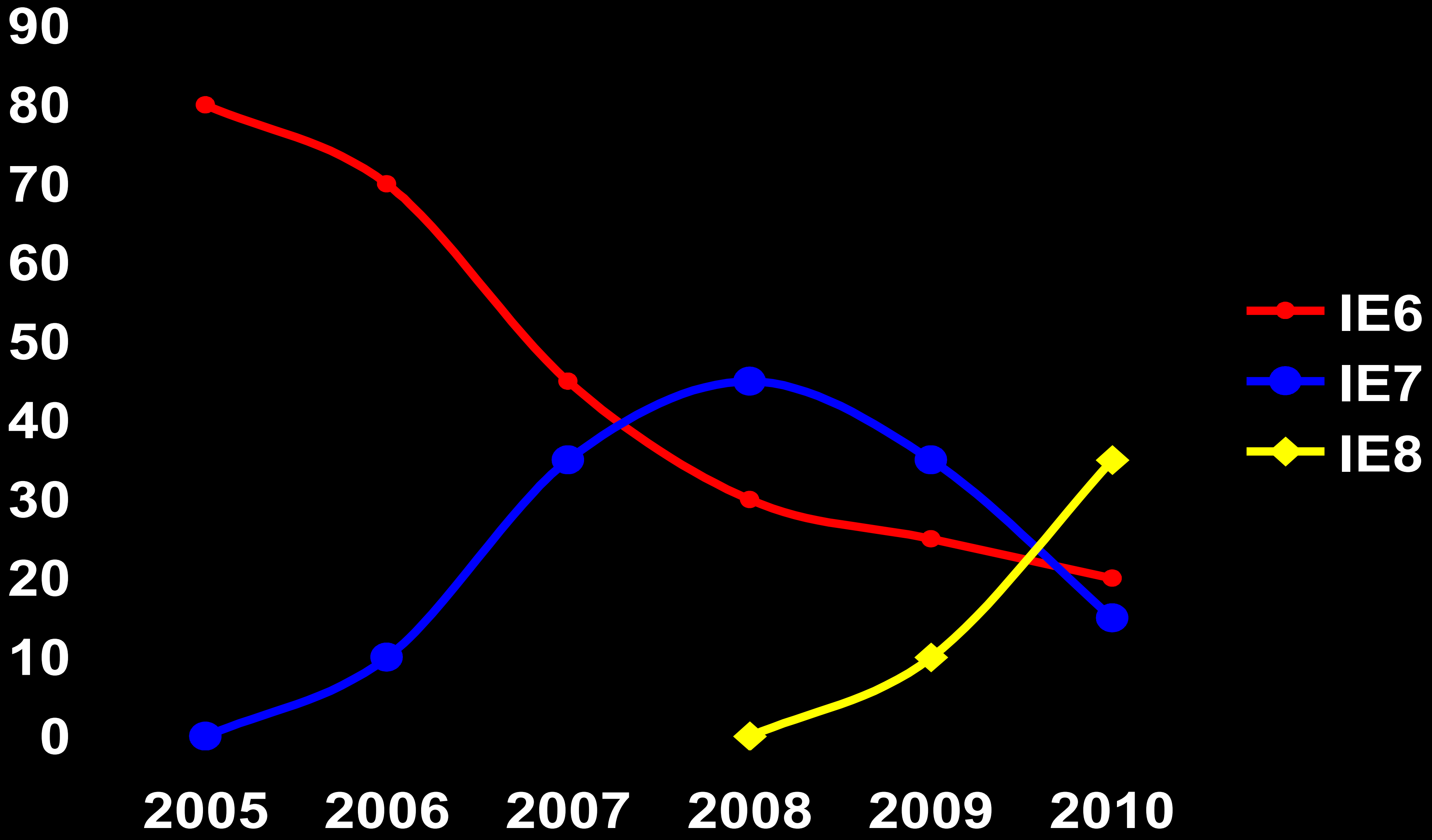
IE 7 -> 8 adoption



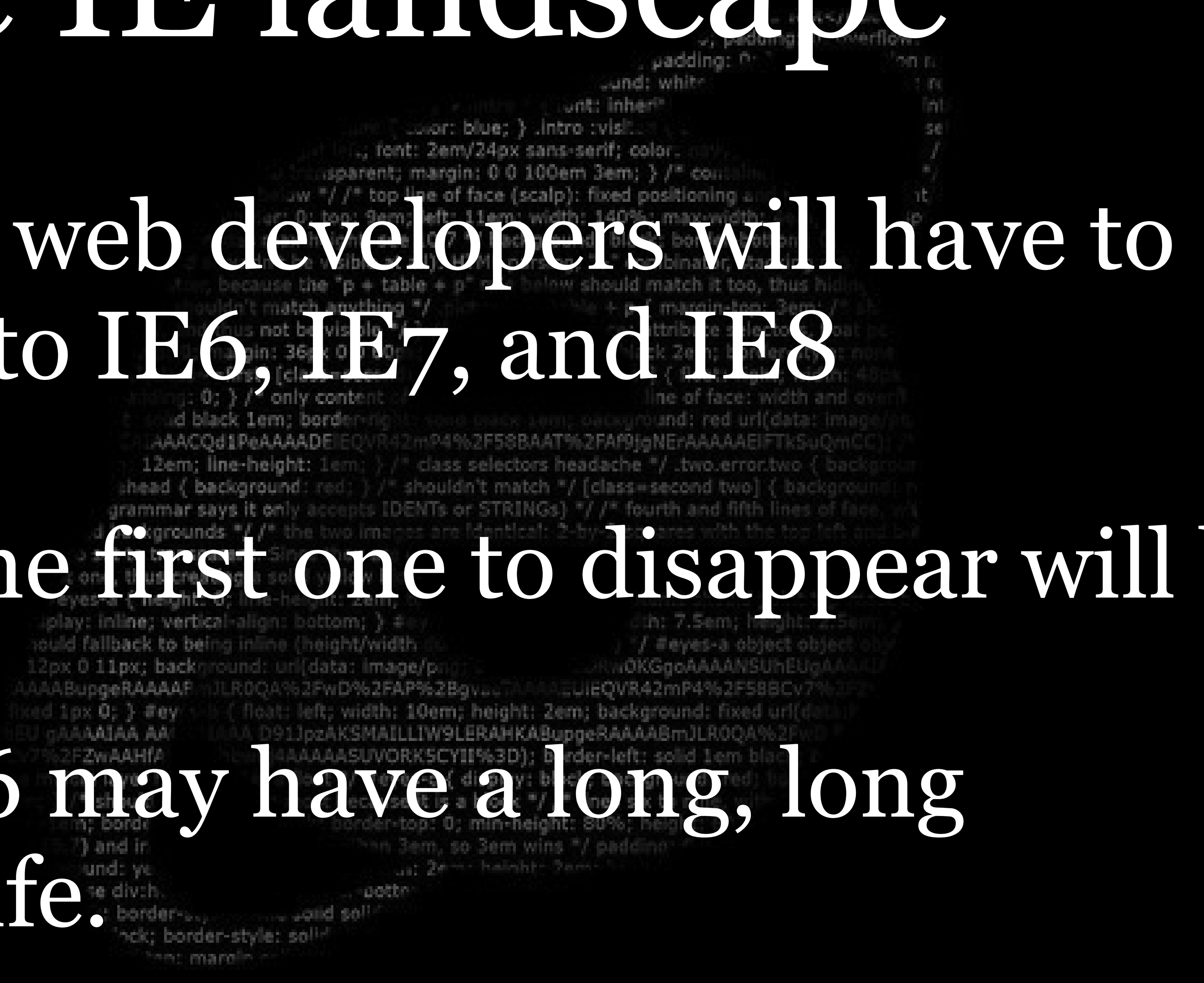
With the backward compatibility problem partly solved, IE 8 will be adopted a bit faster than IE 7

but it will gain market share from IE 7, and not from IE 6.

IE 7 -> 8 adoption



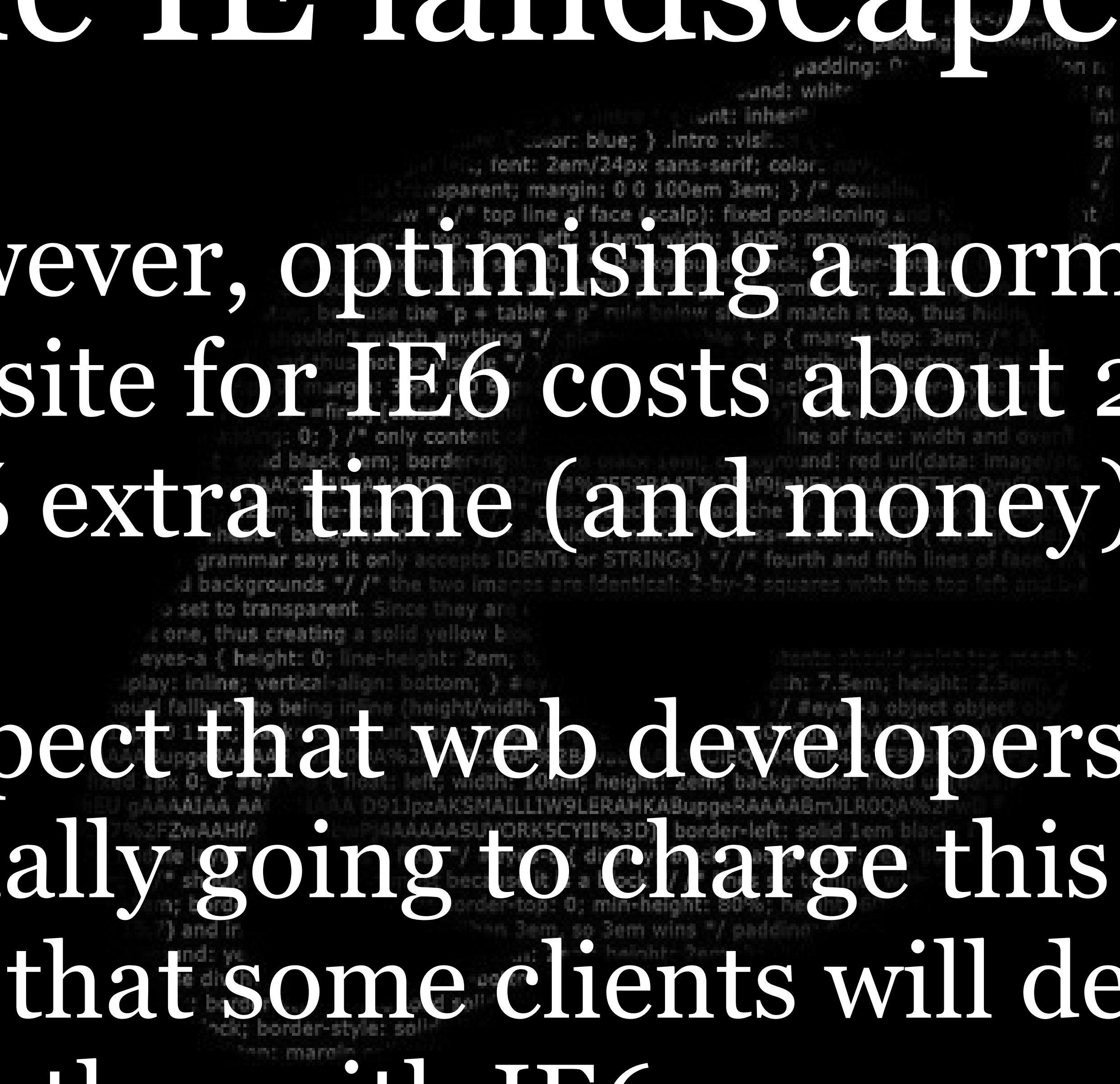
The IE landscape



Thus, web developers will have to cater to IE6, IE7, and IE8

and the first one to disappear will be
IE7,
so IE6 may have a long, long afterlife.

The IE landscape



However, optimising a normal website for IE6 costs about 20% to 30% extra time (and money).

I expect that web developers are actually going to charge this money, and that some clients will decide not to bother with IE6.

The IE landscape

Thus, IE6 will degrade to an Intranet browser for companies that haven't upgraded their Intranet in years

while the companies' employees will use another browser for their daily surfing.

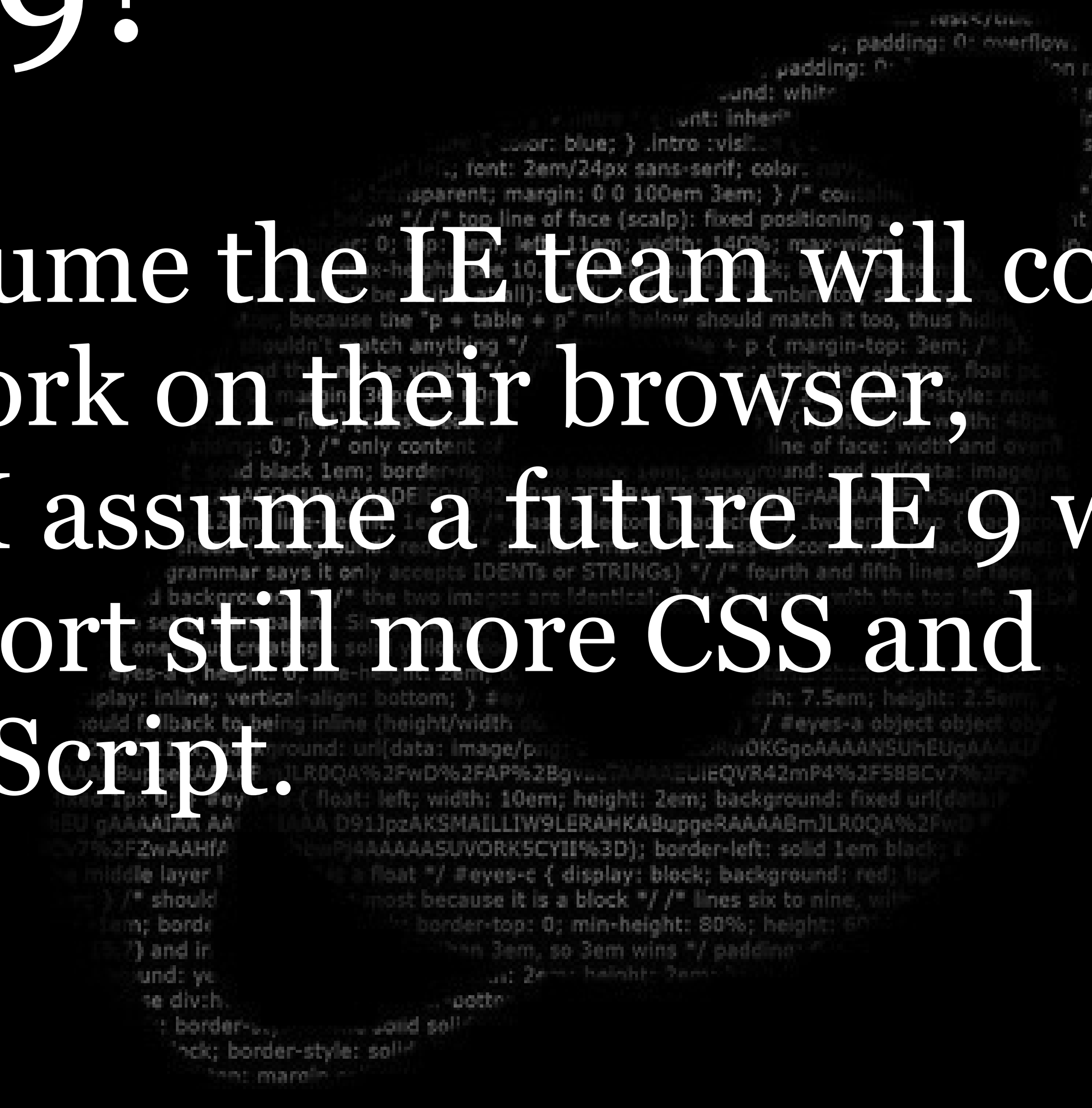
The IE landscape

And that other browser will not be IE

because you can't install one IE version next to another

(well, you can, but the average sysadmin won't like it)

IE 9?

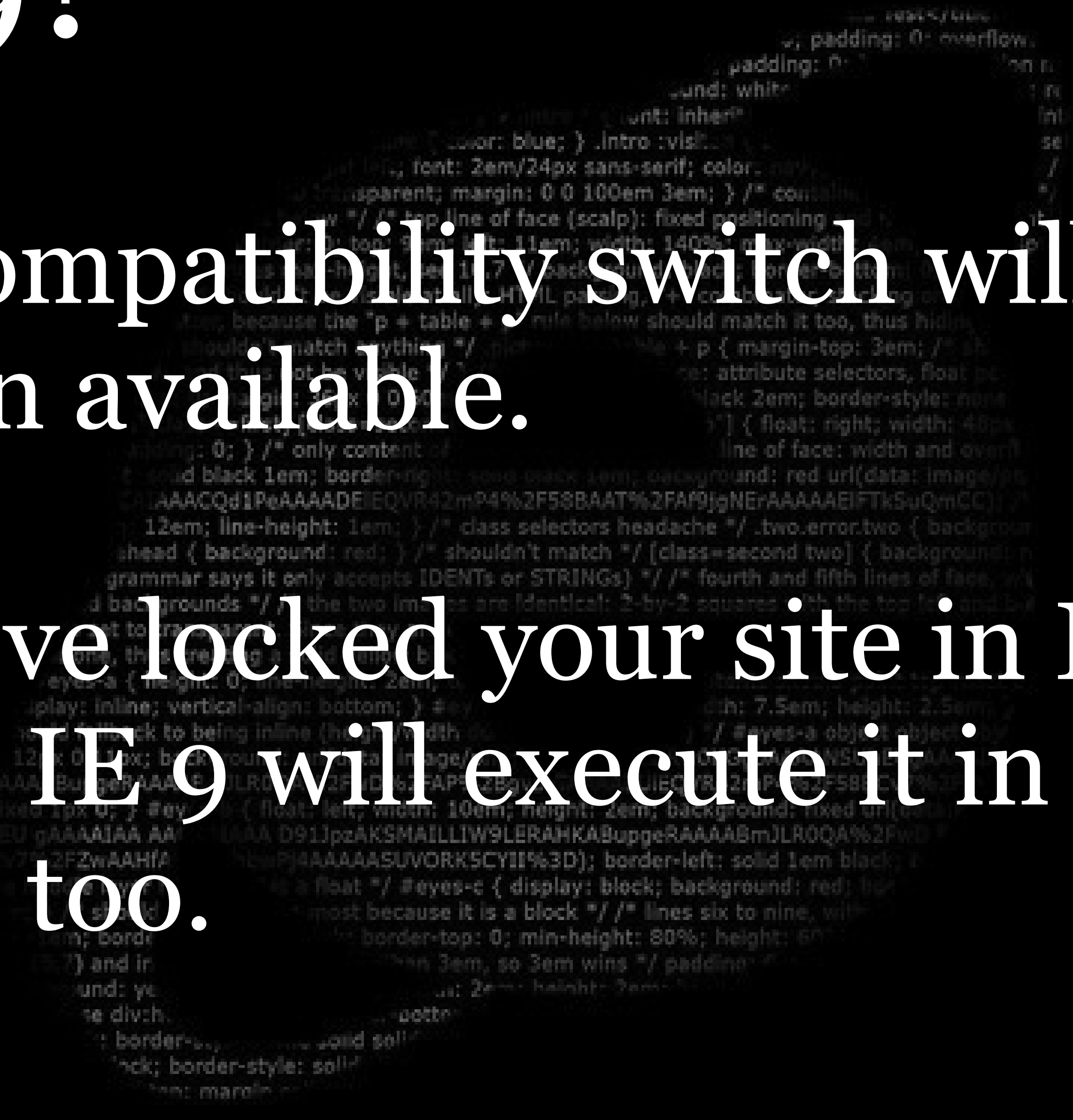


I assume the IE team will continue to work on their browser,
and I assume a future IE 9 will support still more CSS and JavaScript.

IE 9?

The compatibility switch will also remain available.

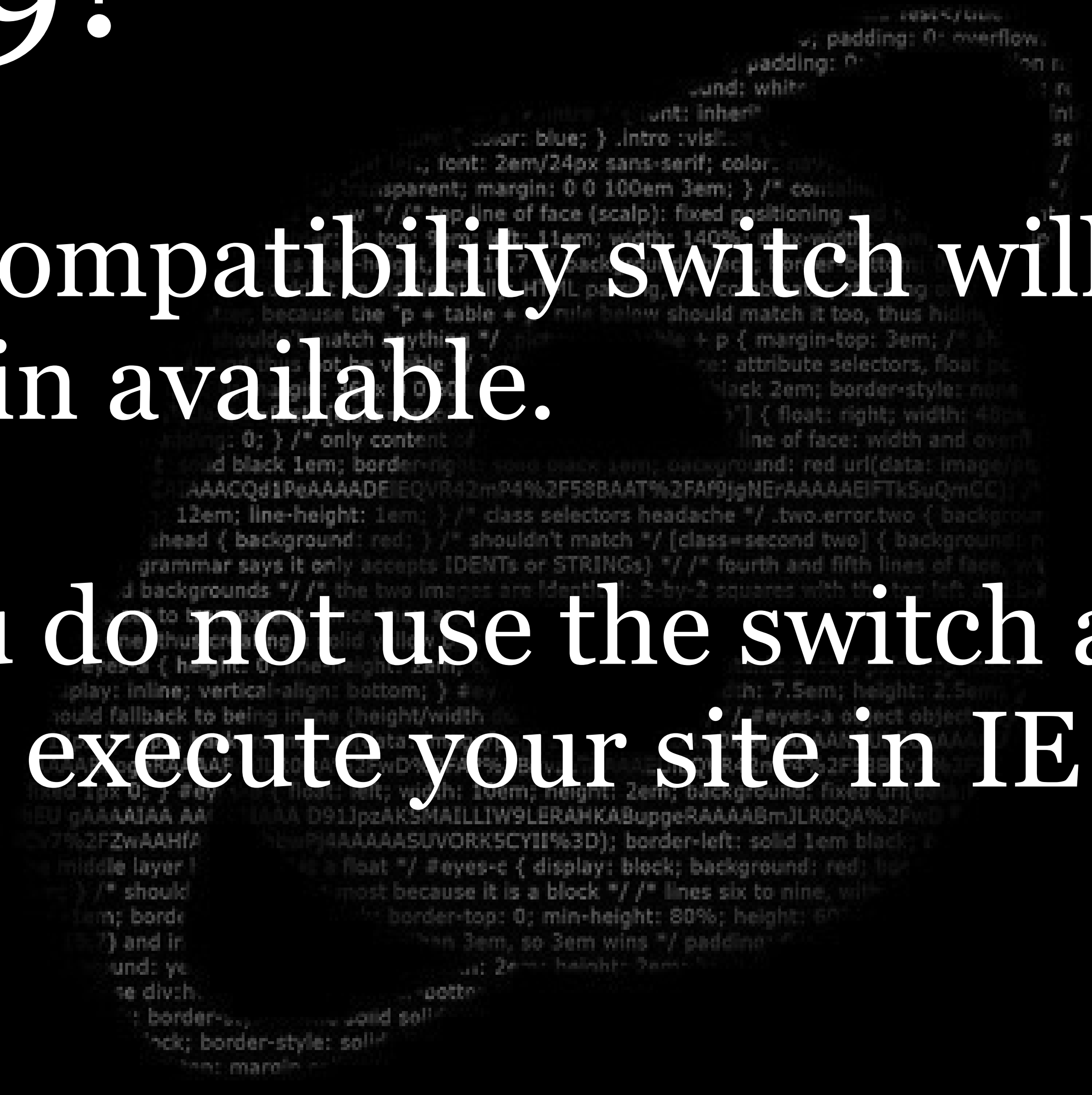
If you've locked your site in IE 8 mode, IE 9 will execute it in IE 8 mode, too.



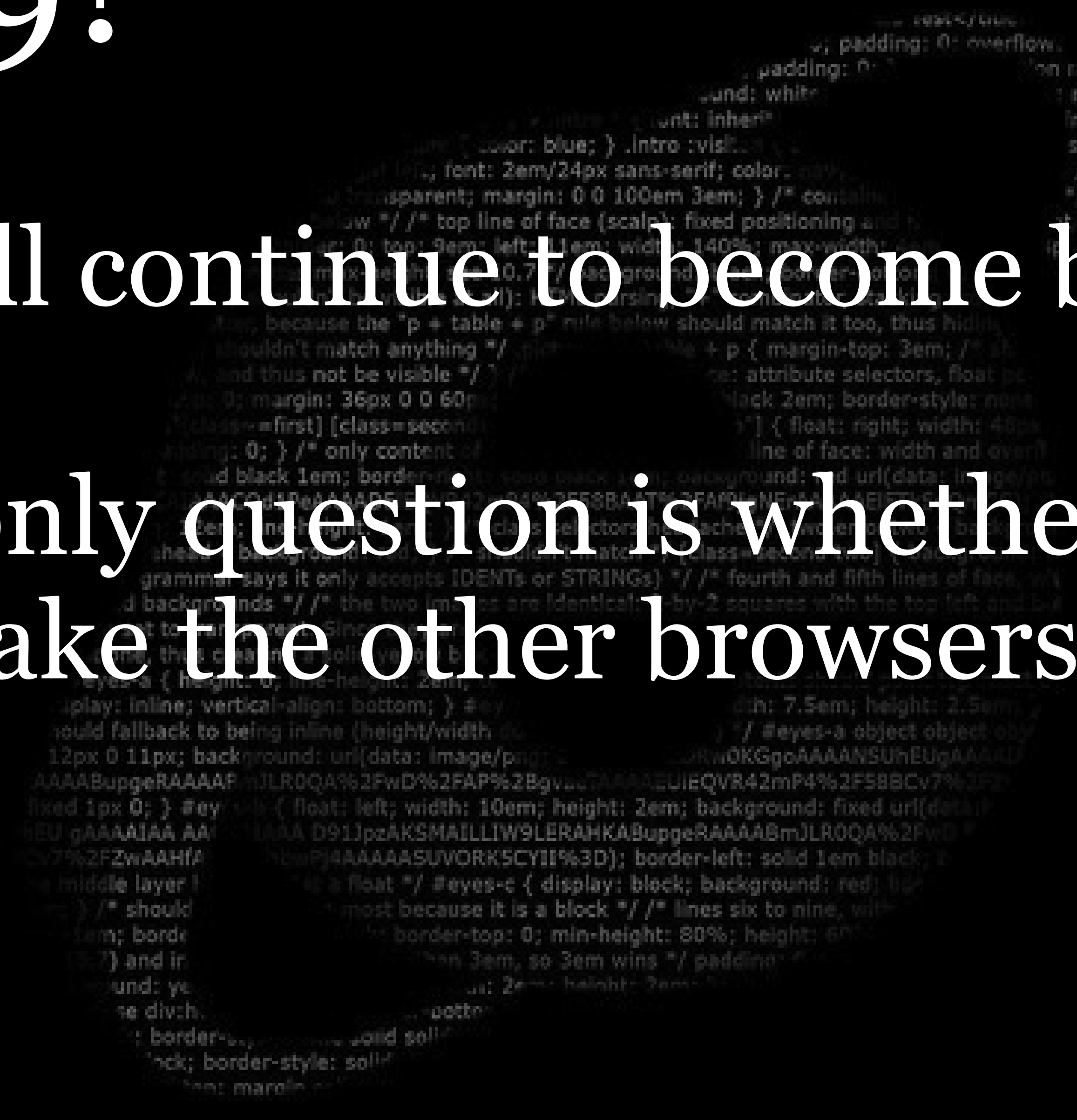
IE 9?

The compatibility switch will also remain available.

If you do not use the switch at all, IE 9 will execute your site in IE 9 mode.

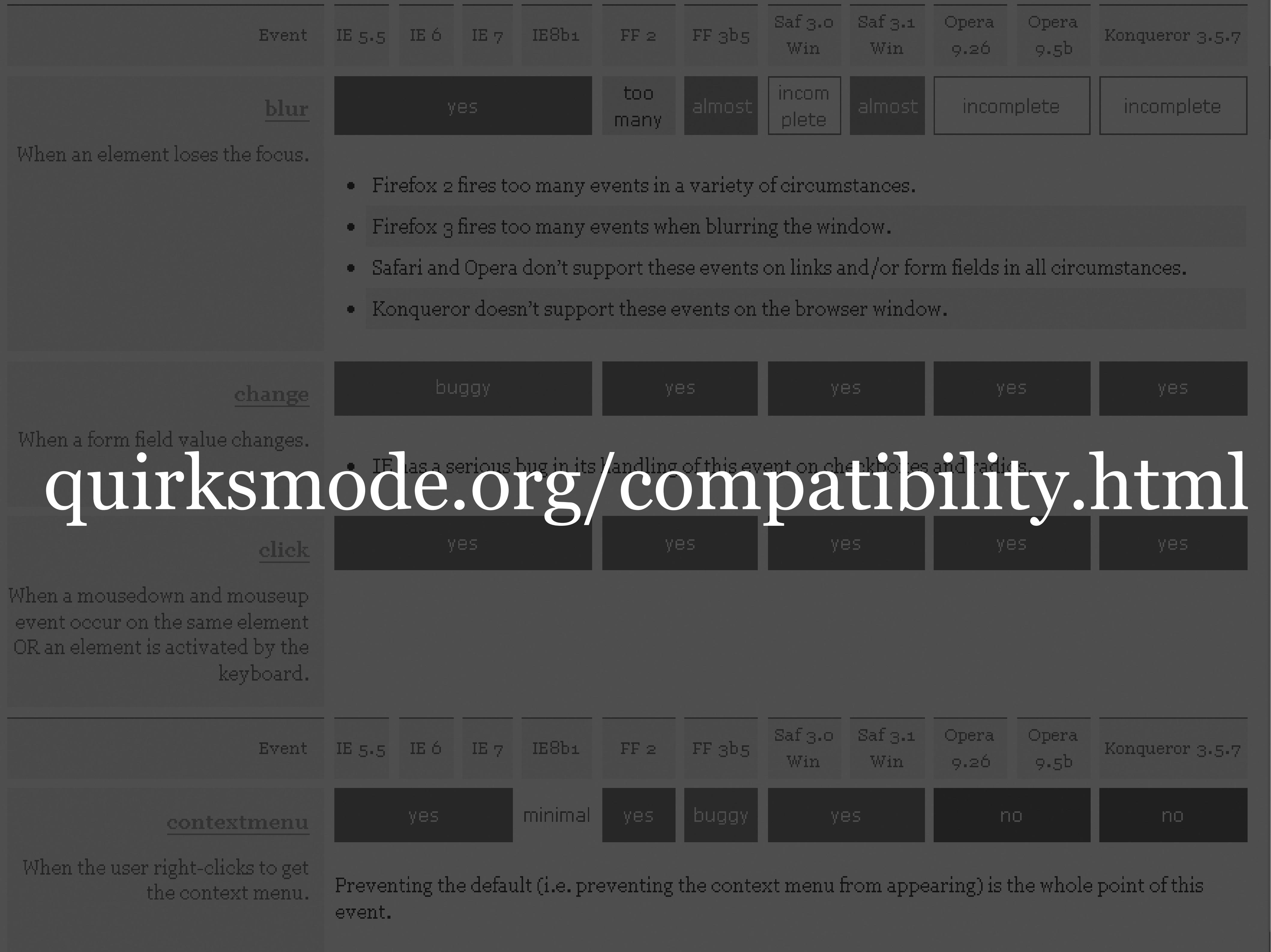


IE 9?



IE will continue to become better.

The only question is whether they'll overtake the other browsers.



Event	IE 5.5	IE 6	IE 7	IE8b1	FF 2	FF 3b5	Saf 3.0 Win	Saf 3.1 Win	Opera 9.26	Opera 9.5b	Konqueror 3.5.7
blur When an element loses the focus.	yes				too many	almost	incomplete	almost	incomplete		incomplete
	• Firefox 2 fires too many events in a variety of circumstances. • Firefox 3 fires too many events when blurring the window. • Safari and Opera don’t support these events on links and/or form fields in all circumstances. • Konqueror doesn’t support these events on the browser window.										
change When a form field value changes.	buggy				yes		yes		yes		yes
	• IE has a serious bug in its handling of this event on checkboxes and radios.										
click When a mousedown and mouseup event occur on the same element OR an element is activated by the keyboard.	yes				yes		yes		yes		yes

Event	IE 5.5	IE 6	IE 7	IE8b1	FF 2	FF 3b5	Saf 3.0 Win	Saf 3.1 Win	Opera 9.26	Opera 9.5b	Konqueror 3.5.7
contextmenu When the user right-clicks to get the context menu.	yes			minimal	yes	buggy	yes		no		no
	Preventing the default (i.e. preventing the context menu from appearing) is the whole point of this event.										

quirksmode.org/compatibility.html

Questions?

Ask away.

Or ask me on Twitter
http://twitter.com/**ppk**
or on my site
http://quirksmode.org

Event	IE 5.5	IE 6	IE 7	IE8b1	FF 2	FF 3b5	Saf 3.0 Win	Saf 3.1 Win	Opera 9.26	Opera 9.5b	Konqueror 3.5.7
blur When an element loses the focus.	[illegible]				too many	almost	incomplete	almost	incomplete		incomplete
change When a form field value changes.	buggy				yes		yes		yes		yes
click When a mousedown and mouseup event occur on the same element OR an element is activated by the keyboard.	yes				yes		yes		yes		yes

- Firefox 2 fires too many events in a variety of circumstances.
- Firefox 3 fires too many events when blurring the window.
- Safari and Opera don't support these events on links and/or form fields in all circumstances.
- Konqueror doesn't support these events on the browser window.

- IE has a serious bug in its handling of this event on checkboxes and radios.

Event	IE 5.5	IE 6	IE 7	IE8b1	FF 2	FF 3b5	Saf 3.0 Win	Saf 3.1 Win	Opera 9.26	Opera 9.5b	Konqueror 3.5.7
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Preventing the default (i.e. preventing the context menu from appearing) is the whole point of this event.