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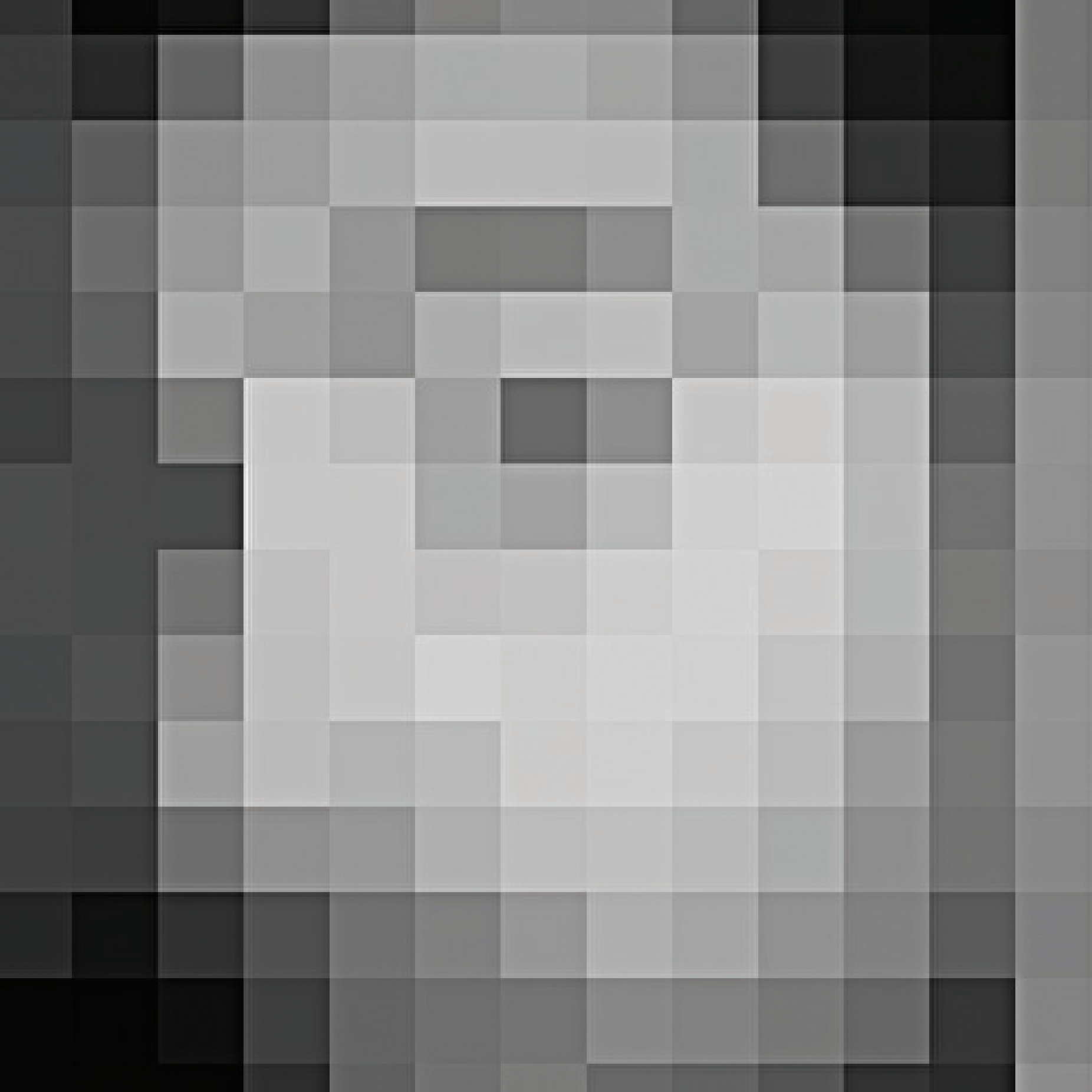
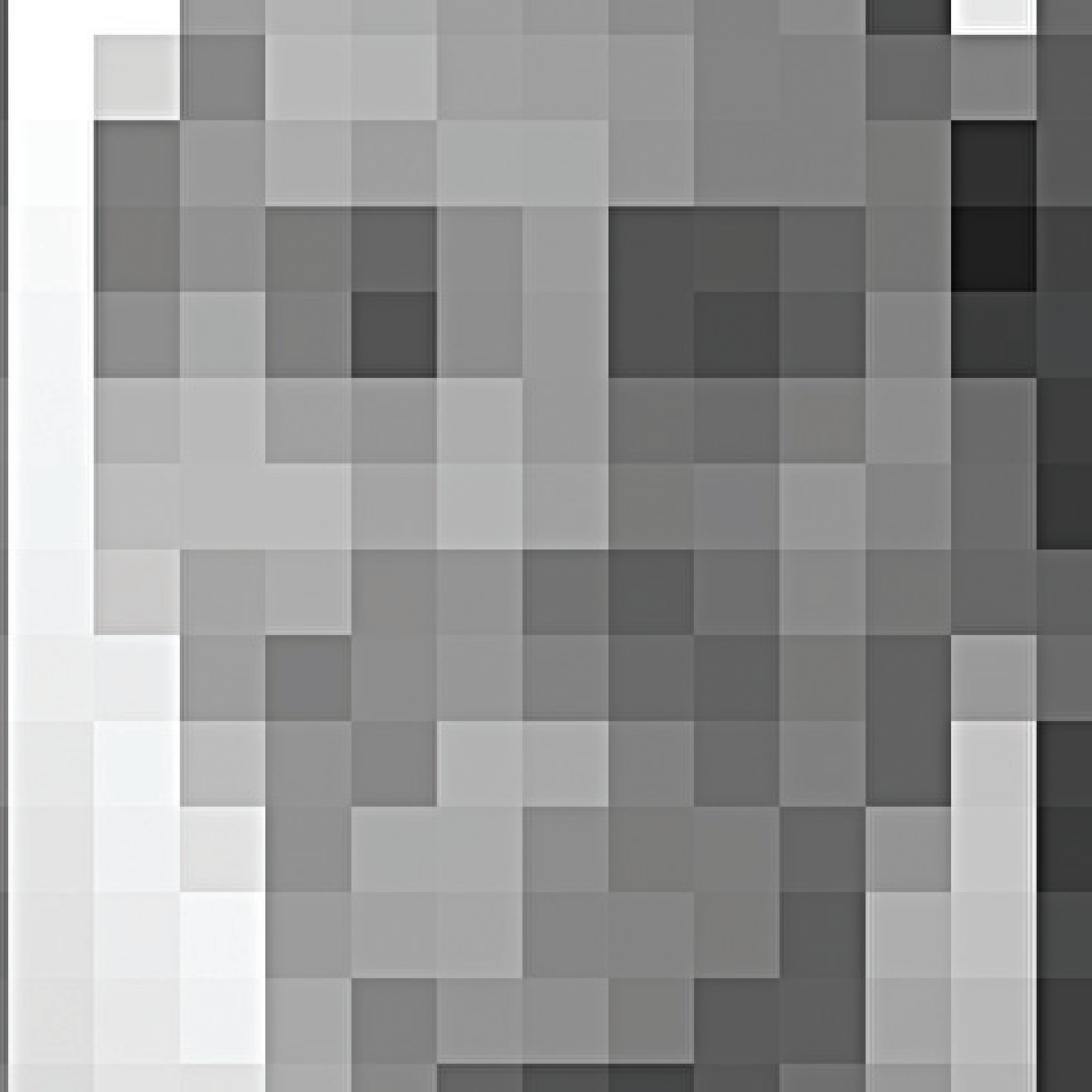




1

Drew McLellan

Finding your way with static maps

Drew McLellan is Director and Senior Developer at UK-based web development agency edgeofmyseat.com, and is the lead developer on Perch. Formerly Group Lead at the Web Standards Project, he likes to chat about microformats whenever the opportunity arises. When not publishing 24 ways, Drew keeps a personal site covering web development issues and themes and tweets a lot.

Since the introduction of the Google Maps service in 2005, online maps have taken off in a way not really possible before the invention of slippy map interaction. Although quickly followed by a plethora of similar services from both commercial and non-commercial parties, Google's first-mover advantage, and easy-to-use developer API saw Google Maps become pretty much the de facto mapping service.

It's now so easy to add a map to a web page, there's no reason not to. Dropping an iframe map into your page is as simple as embedding a YouTube video.

But there's one crucial drawback to both the solution Google provides for you to drop into your page and the code developers typically implement themselves – they don't work without JavaScript.

A bit about JavaScript

Back in October of this year, The Yahoo! Developer Network blog ran some tests to measure how many visitors to the Yahoo! home page didn't have JavaScript available or enabled in their browser. It's an interesting test when you consider that the audience for the Yahoo! home page (one of the most visited pages on the web) represents about as mainstream a sample as you'll find. If there's any such thing as an 'average Web user' then this is them.

The results surprised me. It varied from region to region, but at most just two per cent of visitors didn't have JavaScript running. To be honest, I was expecting it to be higher, but this quote from the article caught my attention:

> *While the percentage of visitors with JavaScript disabled seems like a low number, keep in mind that small percentages of big numbers are also big numbers.*

That's right, of course, and it got me thinking about what that two per cent means. For many sites, two per cent is the number of visitors using the Opera web browser, using IE6, or using Mobile Safari.

So, although a small percentage of the total, users without JavaScript can't just be forgotten about, and catering for them is at the very heart of how the web is supposed to work.

Starting with content in HTML, we layer on presentation with CSS and then enhance interactivity with JavaScript. If anything fails along the way or the network craps out, or a browser just doesn't support one of the technologies, the user still gets something they can work with.

It's – also known as doing our jobs properly.

Sorry, wasn't this about maps?

As I was saying, the default code Google provides, and the example code it gives to developers (which typically just gets followed 'as is') doesn't account for users without JavaScript. No JavaScript, no content.

When adding the ability to publish maps to our small content management system Perch, I didn't want to provide a solution that only worked with JavaScript. I had to go looking for a way to provide maps without JavaScript, too.

There's a simple solution, fortunately, in the form of static map tiles. All the various slippy map services use a JavaScript interface on top of what are basically rendered map image tiles. Dragging the map loads in more image tiles in the direction you want to view. If you've used a slippy map on a slow connection, you'll be familiar with seeing these tiles load in one by one.

The Static Map API

The good news is that these tiles (or tiles just like them) can be used as regular images on your site. Google has a Static Map API which not only gives you a handy interface to retrieve a tile for the exact area you need, but also allows you to place pins, and zoom and centre the tile so that the image looks just so.

This means that you can create a static, non-JavaScript version of your slippy map's initial (or ideal) state to load into your page as a regular image, and then have the JavaScript map hijack the image and make it slippy.

Clearly, that's not going to be a perfect solution for every map's requirements. It doesn't allow for panning, zooming or interrogation without JavaScript. However, for the majority of straightforward map uses online, a static map makes a great alternative for those visitors without JavaScript.

Here's the how

Retrieving a static map tile is staggeringly easy – it's just a case of forming a URL with the correct arguments and then using that as the src of an image tag.

```
<img src="http://maps.google.com/maps/api/staticmap
?center=Bethlehem+Israel
&amp;zoom=5
&amp;size=540x280
&amp;maptype=satellite
&amp;markers=color:red|31.4211,35.1144
&amp;sensor=false"
width="540" height="280" alt="Map of Bethlehem, Israel" />
```

As you can see, there are a few key options that we pass along to the base URL. All of these should be familiar to anyone who's worked with the JavaScript API.

- center determines the point on which the map is centred. This can be latitude and longitude values, or simply an address which is then geocoded.
- zoom sets the zoom level.
- size is the pixel dimensions of the image you require.
- maptype can be roadmap, satellite, terrain or hybrid.
- markers sets one or more pin locations. Markers can be labelled, have different colours, and so on – there's quite a lot of control available.
- sensor states whether you are using a sensor to determine the user's location. When just embedding a map in a web page, set this to false.

There are many options, including plotting paths and setting the image format, which can all be found in the straightforward documentation.

Adding to your page

If you've worked with the JavaScript API, you'll know that it needs a container element which you inject the map into:

```
<div id="map"></div>
```

All you need to do is put your static image inside that container:

```
<div id="map">
<img src="http://maps.google.com/maps/api/staticmap[...]" />
</div>
```

And then, in your JavaScript, find the image and remove it. For example, with jQuery you'd simply use:

```
$('#map img').remove();
```

Why not use a <noscript> element around the image? You could, and that would certainly work fine for browsers that do not support JavaScript. What that won't cover, however, is the situation where the browser has JavaScript support but, for whatever reason, the JavaScript doesn't run. This could be due to network issues, an aggressive corporate firewall, or even just a bug in your code. So for that reason, we put the image in for all browsers that show images, and then remove it when the JavaScript is successfully running.

About rate limits

The Google Static Map API limits the requests per site viewer – currently at one thousand distinct maps per day per viewer. So, for most sites you really don't need to worry about the rate limit. Requests for the same tile aren't normally counted, as the tile has already been generated and is cached. You can embed the images direct from Google and let it worry about the distribution and caching.

In conclusion

As you can see, adding a static map alongside your dynamic map for those users without JavaScript is very easy indeed. There may not be a huge percentage of web visitors browsing without JavaScript but, as we've seen, a small percentage of a big number is still a big number. When it's so easy to add a static map, can you really justify not doing it?

2

Richard Rutter

Using the WebFont Loader to Make Browsers Behave the Same

Richard Rutter is a user experience consultant and director of Clearleft. In 2009 he cofounded the webfont service, Fontdeck. He runs an ongoing project called The Elements of Typographic Style Applied to the Web, where he extols the virtues of good web typography. Richard occasionally blogs at Clagnut, where he writes about design, accessibility and web standards issues, as well as his passion for music and mountain biking.

Safari, Chrome and Internet Explorer leave a blank space in place of the styled text while the web font is loading. Opera and Firefox show text with the default font which switches over when the web font has loaded, resulting in the so-called Flash of Unstyled Text (aka FOUT). Some people prefer Safari's approach as it eliminates FOUT, others think the Firefox way is more appropriate as content can be read whilst fonts download. Whatever your preference, the WebFont Loader can make all browsers behave the same way.

The WebFont Loader is a JavaScript library that gives you extra control over font loading. It was co-developed by Google and Typekit, and released as open source. The WebFont Loader works with most web font services as well as with self-hosted fonts.

The WebFont Loader tells you when the following events happen as a browser downloads web fonts (or loads them from cache):

- when fonts start to download ('loading')
- when fonts finish loading ('active')
- if fonts fail to load ('inactive')

If your web page requires more than one font, the WebFont Loader will trigger events for individual fonts, and for all the fonts as a whole. This means you can find out when any single font has loaded, and when all the fonts have loaded (or failed to do so).

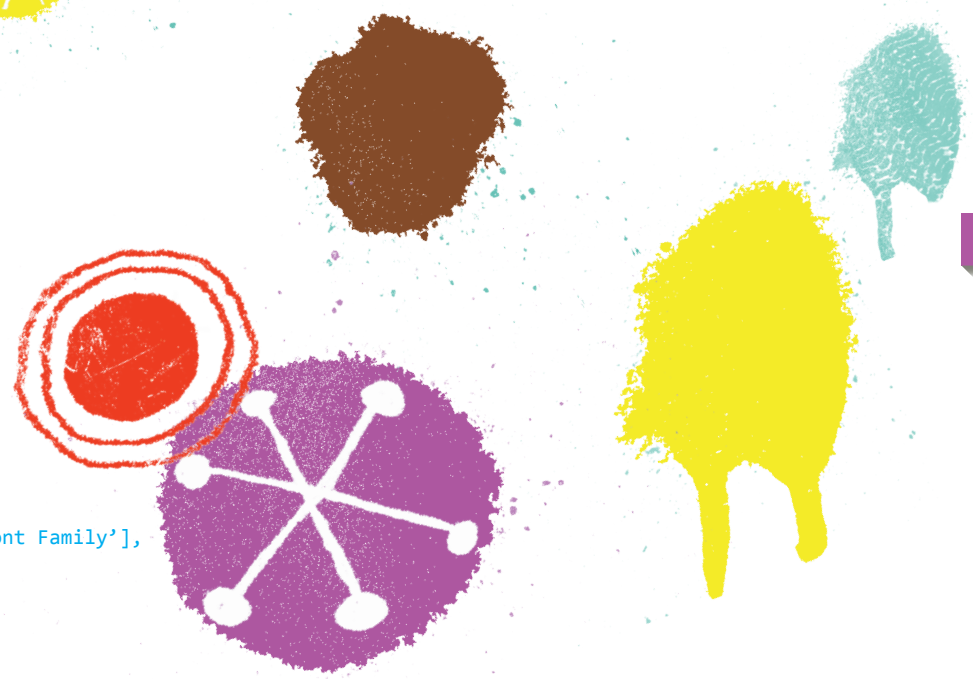
The WebFont Loader notifies you of these events in two ways: by applying special CSS classes when each event happens; and by firing JavaScript events. For our purposes, we'll be using just the CSS classes.

Implementing the WebFont Loader

As stated above, the WebFont Loader works with most web font services as well as with self-hosted fonts.

Self-hosted fonts

To use the WebFont Loader when you are hosting the font files on your own server, paste the following code into your web page:



```
<script type="text/javascript">
WebFontConfig = {
custom: { families: ['Font Family Name', 'Another Font Family'],
urls: [ 'http://yourwebsite.com/styles.css' ] }
};

(function() {
var wf = document.createElement('script');
wf.src = ('https:' == document.location.protocol ? 'https' :
'http') + '://ajax.googleapis.com/ajax/libs/webfont/1/webfont.js';
wf.type = 'text/javascript';
wf.async = 'true';
var s = document.getElementsByTagName('script')[0];
s.parentNode.insertBefore(wf, s);
})();
</script>
```

Replace Font Family Name and Another Font Family with a comma-separated list of the font families you want to check against, and replace http://yourwebsite.com/styles.css with the URL of the style sheet where your @font-face rules reside.

Fontdeck

Assuming you have added some fonts to a website project in Fontdeck, use the aforementioned code for self-hosted solutions and replace http://yourwebsite.com/styles.css with the URL of the <link> tag in your Fontdeck website settings page. It will look something like http://f.fontdeck.com/s/css/xxxx/domain/nnnn.css.

Typekit

Typekit's JavaScript-based implementation incorporates the WebFont Loader events by default, so you won't need to include any WebFont Loader code.

Making all browsers behave like Safari

To make Firefox and Opera work in the same way as WebKit browsers (Safari, Chrome, etc.) and Internet Explorer, and thus minimise FOUT, you need to hide the text while the fonts are loading.

While fonts are loading, the WebFont Loader adds a class of wf-loading to the <html> element. Once the fonts have loaded, the wf-loading class is removed and replaced with a class of wf-active (or wf-inactive if all of the fonts failed to load). This means you can style elements on the page while the fonts are loading and then style them differently when the fonts have finished loading.

So, let's say the text you need to hide while fonts are loading is contained in all paragraphs and top-level headings. By writing the following style rule into your CSS, you can hide the text while the fonts are loading:

```
.wf-loading h1, .wf-loading p {
visibility:hidden; }
```

Because the wf-loading class is removed once the the fonts have loaded, the visibility:hidden rule will stop being applied, and the text revealed. You can see this in action on this simple example page.

That works nicely across the board, but the situation is slightly more complicated. WebKit doesn't wait for all fonts to load before displaying text: it displays text elements as soon as the relevant font is loaded.

To emulate WebKit more accurately, we need to know when individual fonts have loaded, and apply styles accordingly. Fortunately, as mentioned earlier, the WebFont Loader has events for individual fonts too.
When a specific font is loading, a class of the form wf-fontfamilyname-n4-loading is applied. Assuming headings and paragraphs are styled in different fonts, we can make our CSS more specific as follows:

```
.wf-fontfamilyname-n4-loading h1,
.wf-anotherfontfamily-n4-loading p {
visibility:hidden;}
```

Note that the font family name is transformed to lower case, with all spaces removed. The n4 is a shorthand for the weight and style of the font family. In most circumstances you'll use n4 but refer to the WebFont Loader documentation for exceptions.

You can see it in action on this Safari example page (you'll probably need to disable your cache to see any change occur).

Making all browsers behave like Firefox

To make WebKit browsers and Internet Explorer work like Firefox and Opera, you need to explicitly show text while the fonts are loading. In order to make this happen, you need to specify a font family which is not a web font while the fonts load, like this:

```
.wf-fontfamilyname-n4-loading h1 {
font-family: 'arial narrow', sans-serif; }

.wf-anotherfontfamily-n4-loading p {
font-family: arial, sans-serif; }
```

You can see this in action on the Firefox example page (again you'll probably need to disable your cache to see any change occur).

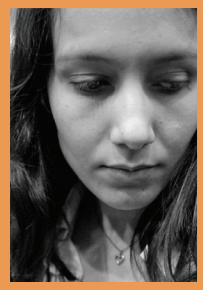
And there's more

That's just the start of what can be done with the WebFont Loader. More areas to explore would be tweaking font sizes to reduce the impact of reflowing text and to better cater for very narrow fonts. By using the JavaScript events much more can be achieved too, such as fading in text as the fonts load.

3

Inayaili de León

My CSS Wish List



Inayaili de León (or just Yaili) is a web designer and blogger. She grew-up in Portugal and currently lives and works in London, spending most of her days creating clean markup, writing and trying hard to ignore the existence of Internet Explorer (and failing).

Her articles can be read on her own blog, Web Designer Notebook, but she frequently writes for Smashing Magazine on the topic of advanced CSS.

I love Christmas. I love walking around the streets of London, looking at the beautifully decorated windows, seeing the shiny lights that hang above Oxford Street and listening to Christmas songs.

I'm not going to lie though. Not only do I like buying presents, I love receiving them too. I remember making long lists that I would send to Father Christmas with all of the Lego sets I wanted to get. I knew I could only get one a year, but I would spend days writing the perfect list.

The years have gone by, but I still enjoy making wish lists. And I'll tell you a little secret: my mum still asks me to send her my Christmas list every year.

This time I've made my CSS wish list. As before, I'd be happy with just one present.

Before I begin…

… this list includes:

- things that don't exist in the CSS specification (if they do, please let me know in the comments – I may have missed them);
- others that are in the spec, but it's incomplete or lacks use cases and examples (which usually means that properties haven't been implemented by even the most recent browsers).

Like with any other wish list, the further down I go, the more unrealistic my expectations – but that doesn't mean I can't wish. Some of the things we wouldn't have thought possible a few years ago have been implemented and our wishes fulfilled (think multiple backgrounds, gradients and transformations, for example).

The list

Cross-browser implementation of font-size-adjust

When one of the fall-back fonts from your font stack is used, rather than the preferred (first) one, you can retain the aspect ratio by using this very useful property. It is incredibly helpful when the fall-back fonts are smaller or larger than the initial one, which can make layouts look less polished.

What font-size-adjust does is divide the original font-size of the fall-back fonts by the font-size-adjust value. This preserves the x-height of the preferred font in the fall-back fonts. Here's a simple example:

```
p {
font-family: Calibri, "Lucida Sans", Verdana, sans-serif;
font-size-adjust: 0.47; }
```

In this case, if the user doesn't have Calibri installed, both Lucida Sans and Verdana will keep Calibri's aspect ratio, based on the font's x-height. This property is a personal favourite and one I keep pointing to.

Firefox supported this property from version three. So far, it's the only browser that does. Fontdeck provides the font-size-adjust value along with its fonts, and has a handy tool for calculating it.

More control over overflowing text

The text-overflow property lets you control text that overflows its container. The most common use for it is to show an ellipsis to indicate that there is more text than what is shown. To be able to use it, the container should have overflow set to something other than visible, and white-space: nowrap:

```
div {
white-space: nowrap;
width: 100%;
overflow: hidden;
text-overflow: ellipsis; }
```

This, however, only works for blocks of text on a single line. In the wish list of many CSS authors (and in mine) is a way of defining text-overflow: ellipsis on a block of multiple text lines. Opera has taken the first step and added support for the -o-ellipsis-lastline property, which can be used instead of ellipsis. This property is not part of the CSS3 spec, but we could certainly make good use of it if it were...

WebKit has -webkit-line-clamp to specify how many lines to show before cutting with an ellipsis, but support is patchy at best and there is no control over where the ellipsis shows in the text. Many people have spent time wrangling JavaScript to do this for us, but the methods used are very processor intensive, and introduce a JavaScript dependency.

Indentation and hanging punctuation properties

You might notice a trend here: almost half of the items in this list relate to typography. The lack of fine-grained control over typographical detail is a general concern among designers and CSS authors. Indentation and hanging punctuation fall into this category.

The CSS3 specification introduces two new possible values for the text-indent property: each-line; and hanging. each-line would indent the first line of the block container and each line after a forced line break; hanging would invert which lines are affected by the indentation.

The proposed hanging-punctuation property would allow us to specify whether opening and closing brackets and quotes should hang outside the edge of the first and last lines. The specification is still incomplete, though, and asks for more examples and use cases.

Text alignment and hyphenation properties

Following the typographic trend of this list, I'd like to add better control over text alignment and hyphenation properties. The CSS3 module on Generated Content for Paged Media already specifies five new hyphenation-related properties (namely: hyphenate-dictionary; hyphenate-before and hyphenate-after; hyphenate-lines; and hyphenate-character), but it is still being developed and lacks examples.

In the text alignment realm, the new text-align-last property allows you to define how the last line of a block (or a line just before a forced break) is aligned, if your text is set to justify. Its value can be: start; end; left; right; center; and justify. The text-justify property should also allow you to have more control over text set to text-align: justify but, for now, only Internet Explorer supports this.

CALC()

This is probably my favourite item in the list: the calc() function. This function is part of the CSS3 Values and Units module, but it has only been implemented by Firefox (4.0). To take advantage of it now you need to use the Mozilla vendor code, -moz-calc().

Imagine you have a fluid two-column layout where the sidebar column has a fixed width of 240 pixels, and the main content area fills the rest of the width available. This is how you could create that using -moz-calc():

```
#main { width: -moz-calc(100% - 240px); }
```

Can you imagine how many hacks and headaches we could avoid were this function available in more browsers? Transitions and animations are really nice and lovely but, for me, it's the ability to do the things that calc() allows you to that deserves the spotlight and to be pushed for implementation.

Selector grouping with -moz-any()

The -moz-any() selector grouping has been introduced by Mozilla but it's not part of any CSS specification (yet?); it's currently only available on Firefox 4.

This would be especially useful with the way HTML5 outlines documents, where we can have any number of variations of several levels of headings within numerous types of containers (think sections within articles within sections...).

Here is a quick example (copied from the Mozilla blog post about the article) of how -moz-any() works. Instead of writing:

```
section section h1, section article h1, section aside h1,
section nav h1, article section h1, article article h1,
article aside h1, article nav h1, aside section h1,
aside article h1, aside aside h1, aside nav h1, nav section h1,
nav article h1, nav aside h1, nav nav h1, {
font-size: 24px; }
```

You could simply write:

```
-moz-any(section, article, aside, nav)
-moz-any(section, article, aside, nav) h1 {
font-size: 24px; }
```

Nice, huh?

More control over styling form elements

Some are of the opinion that form elements shouldn't be styled at all, since a user might not recognise them as such if they don't match the operating system's controls. I partially agree: I'd rather put the choice in the hands of designers and expect them to be capable of deciding whether their particular design hampers or improves usability.

I would say the same idea applies to font-face: while some fear designers might go crazy and litter their web pages with dozens of different fonts, most welcome the freedom to use something other than Arial or Verdana.

There will always be someone who will take this freedom too far, but it would be useful if we could, for example, style the default Opera date picker:

```
<input type="date" />
```

or Safari's slider control (think star movie ratings, for example):

```
<input type="range" min="0" max="5" step="1" value="3" />
```

Parent selector

I don't think there is one CSS author out there who has never come across a case where he or she wished there was a parent selector. There have been many suggestions as to how this could work, but a variation of the child selector is usually the most popular:

```
article < h1 { … }
```

One can dream…

Flexible box layout

The Flexible Box Layout Module sounds a bit like magic: it introduces a new box model to CSS, allowing you to distribute and order boxes inside other boxes, and determine how the available space is shared.

Two of my favourite features of this new box model are:

- the ability to redistribute boxes in a different order from the markup
- the ability to create flexible layouts, where boxes shrink (or expand) to fill the available space

Let's take a quick look at the second case. Imagine you have a three-column layout, where the first column takes up twice as much horizontal space as the other two:

```
<body>
<section id="main"></section>
<section id="links"></section>
<aside></aside>
</body>
```

With the flexible box model, you could specify it like this:

```
body {
display: box;
box-orient: horizontal; }

#main { box-flex: 2; }

#links { box-flex: 1; }

aside { box-flex: 1; }
```

If you decide to add a fourth column to this layout, there is no need to recalculate units or percentages, it's as easy as that.

Browser support for this property is still in its early stages (Firefox and WebKit need their vendor prefixes), but we should start to see it being gradually introduced as more attention is drawn to it (I'm looking at you…). You can read a more comprehensive write-up about this property on the Mozilla developer blog.

It's easy to understand why it's harder to start playing with this module than with things like animations or other more decorative properties, which don't really break your layouts when users don't see them. But it's important that we do, even if only in very experimental projects.

Nested selectors

Anyone who has never wished they could do something like the following in CSS, cast the first stone:

```
article {
h1 { font-size: 1.2em; }
ul { margin-bottom: 1.2em; } }
```

Even though it can easily turn into a specificity nightmare and promote redundancy in your style sheets (if you abuse it), it's easy to see how nested selectors could be useful. CSS compilers such as Less or Sass let you do this already, but not everyone wants or can use these compilers in their projects. Every wish list has an item that could easily be dropped. In my case, I would say this is one that I would ditch first – it's the least useful, and also the one that could cause more maintenance problems. But it could be nice.

Implementation of the ::marker pseudo-element

The CSS Lists module introduces the ::marker pseudo-element, that allows you to create custom list item markers. When an element's display property is set to list-item, this pseudo-element is created.

Using the ::marker pseudo-element you could create something like the following:

```
Footnote 1:  Both John Locke and his father, Anthony Cooper, are
named after 17th- and 18th-century English philosophers; the
real Anthony Cooper was educated as a boy by the real John
Locke. Footnote 2:  Parts of the plane were used as percussion
instruments and can be heard in the soundtrack.
```

where the footnote marker is generated by the following CSS:

```
li::marker {
content: "Footnote " counter(notes) ":";
text-align: left;
width: 12em; }

li { counter-increment: notes; }
```

You can read more about how to use counters in CSS in my article from last year.

Bear in mind that the CSS Lists module is still a Working Draft and is listed as "Low priority". I did say this wish list would start to grow more unrealistic closer to the end…

Variables

The sight of the word 'variables' may make some web designers shy away, but when you think of them applied to things such as repeated colours in your stylesheets, it's easy to see how having variables available in CSS could be useful.

Think of a website where the main brand colour is applied to elements like the main text, headings, section backgrounds, borders, and so on. In a particularly large website, where the colour is repeated countless times in the CSS and where it's important to keep the colour consistent, using variables would be ideal (some big websites are already doing this by using server-side technology).
Again, Less and Sass allow you to use variables in your CSS but, again, not everyone can (or wants to) use these.

If you are using Less, you could, for instance, set the font-family value in one variable, and simply call that variable later in the code, instead of repeating the complete font stack, like so:

```
@fontFamily: Calibri, "Lucida Grande", "Lucida Sans Unicode",
Helvetica, Arial, sans-serif;
body { font-family: @fontFamily; }
```

Other features of these CSS compilers might also be useful, like the ability to 'call' a property value from another selector (accessors):

```
header { background: #000000; }

footer { background: header['background']; }
```

or the ability to define functions (with arguments), saving you from writing large blocks of code when you need to write something like, for example, a CSS gradient:

```
.gradient (@start:“”, @end:“”) {
background: -webkit-gradient(linear, left top, left bottom,
from(@start), to(@end));
background: -moz-linear-gradient(-90deg,@start,@end); }
button { .gradient(#D0D0D0,#9F9F9F); }
```

Standardised comments

Each CSS author has his or her own style for commenting their style sheets. While this isn't a massive problem on smaller projects, where maybe only one person will edit the CSS, in larger scale projects, where dozens of hands touch the code, it would be nice to start seeing a more standardised way of commenting.

One attempt at creating a standard for CSS comments is CSSDOC, an adaptation of Javadoc (a documentation generator that extracts comments from Java source code into HTML). CSSDOC uses 'DocBlocks', a term borrowed from the phpDocumentor Project. A DocBlock is a human- and machine-readable block of data which has the following structure:

```
/**
 * Short description
 *
 * Long description (this can have multiple lines and contain
<p> tags
 *
 * @tags (optional)
 */
```

CSSDOC includes a standard for documenting bug fixes and hacks, colours, versioning and copyright information, amongst other important bits of data. I know this isn't a CSS feature request per se; rather, it's just me pointing you at something that is usually overlooked but that could contribute towards keeping style sheets easier to maintain and to hand over to new developers.

Final notes

I understand that if even some of these were implemented in browsers now, it would be a long time until all vendors were up to speed. But if we don't talk about them and experiment with what's available, then it will definitely never happen.

Why haven't I mentioned better browser support for existing CSS3 properties? Because that would be the same as adding chocolate to your Christmas wish list – you don't need to ask, everyone knows you want it.

The list could go on. There are dozens of other things I would love to see integrated in CSS or further developed. These are my personal favourites: some might be less useful than others, but I've wished for all of them at some point.

Part of the research I did while writing this article was asking some friends what they would add to their lists; other than a couple of items I already had in mine, everything else was different. I'm sure your list would be different too. So tell me, what's on your CSS wish list?

4

Leslie Jensen-Inman

Go Forth and Make Awesomeness

Leslie Jensen-Inman, assistant professor at The University of Tennessee at Chattanooga, acts on her passion to improve web education through initiatives such as Teach the Web, the Open Web Education Alliance, the WE Rock Summit and Tour, and InterACT. Leslie is co-author and creative director of the book InterACT with Web Standards: A holistic approach to Web design.

We've all dreamed of being a superhero: maybe that's why we've ended up on the web—a place where we can do good deeds and celebrate them on a daily basis.

Wear your dreams

At age four, I wore my Wonder Woman Underoos around my house, my grandparents' house, our neighbor's house, and even around the yard. I wanted to be a superhero when I grew up. I was crushed to learn that there is no school for superheroes—no place to earn a degree in how to save the world from looming evil. Instead, I—like everyone else—was destined to go to ordinary school to focus on ABCs and 123s. Even still, I want to save the world.

Intend your goodness

Random acts of kindness make a difference. Books, films, and advertising campaigns tout random acts of kindness and the positive influence they can have on the world. But why do acts of kindness have to be so random? Why can't we intend to be kind? A true superhero wakes each morning intending to perform selfless acts for the community. Why can't we do the same thing?

As a child, my mother taught me to plan to do at least three good deeds each day. And even now, years later, I put on my invisible cape looking for ways to do good.

Here are some examples:

- slowing down to allow another driver in before me from the highway on-ramp
- bringing a co-worker their favorite kind of coffee or tea
- sharing my umbrella on a rainy day
- holding a door open for someone with full hands
- listening intently when someone shares a story
- complimenting someone on a job well done
- thanking someone for a job well done
- leaving a constructive, or even supportive comment on someone's blog

As you can see, these acts are simple. Doing good and being kind is partially about being aware—aware of the words we speak and the actions we take. Like superheroes, we create our own code of conduct to live by. Hopefully, we choose to put the community before ourselves (within reason) and to do our best not to damage it as we move through our lives.

Take a bite out of the apple

With some thought, we can weave this type of thinking and action into our business choices. We can take the simple acts of kindness concept and amplify it a bit. With this amplification, we can be a new kind of superhero.

In 1997, during a presentation, Steve Jobs stated Apple's core value in a simple, yet powerful, sentence:

> *We believe that people with passion can change the world for the better.*

Apple fan or not, those are powerful words.

Define your core

Every organization must define its core values. Core values help us to frame, recognize, and understand the principles our organization embodies and practices. It doesn't matter if you're starting a new organization or you want to define values within an existing organization. Even if you're a freelancer, defining core values will help guide your decisions and actions.

If you can, work as a team to define core values. Gather the people who are your support system—your business partners, your colleagues, and maybe even a trusted client—this is now your core value creation team. Have a brainstorming session with your team. Let ideas flow. Give equal weight to the things people say. You may not hear everything you thought you might hear—that's OK. You want the session to be free-flowing and honest. Ask yourself and your team questions like:

- What do you think my/our/your core values are?
- What do you think my/our/your priorities are?
- What do you think my/our/your core values should be?
- What do you think my/our/your priorities should be?
- How do you think I/we should treat customers, clients, and each other?
- How do we want others to treat us?
- What are my/our/your success stories?
- What has defined these experiences as successful?

From this brainstorming session, you will craft your superhero code of conduct. You will decide what you will and will not do. You will determine how you will and will not act. You're setting the standards that you will live and work by—so don't take this exercise lightly. Take your time. Use the exercise as a way to open a discussion about values. Find out what you and your team believe in. Set these values and keep them in place. Write them down and share these with your team and with the world. By sharing your core values, you hold yourself more accountable to them. You also send a strong message to the rest of the world about what type of organization you are and what you believe in. Other organizations and people may decide to align or not to align themselves with you because of your core values. This is good. Chances are, you'll be happier and more profitable if you work with other organizations and people who share similar core values.

During your brainstorming session, list keywords. Don't edit. Allow things to take their course. Some examples of keywords might be:

Ability · Achievement · Adventure · Ambition · Altruism · Awareness · Balance · Caring · Charity · Citizenship · Collaboration · Commitment · Community · Compassion · Consideration · Cooperation · Courage · Courtesy · Creativity · Democracy · Dignity · Diplomacy · Discipline · Diversity · Education · Efficiency · Energy · Equality · Excellence · Excitement · Fairness · Family · Freedom · Fun · Goodness · Gratefulness · Growth · Happiness · Harmony · Helping · Honor · Hope · Humility · Humor · Imagination · Individuality · Innovation · Integrity · Intelligence · Joy · Justice · Kindness · Knowledge · Leadership · Learning · Loyalty · Meaning · Mindfulness · Moderation · Modesty · Nurture · Openness · Organization · Passion · Patience · Peace · Planning · Principles · Productivity · Purpose · Quality · Reliability · Respectfulness · Responsibility · Security · Sensitivity · Service · Sharing · Simplicity · Stability · Tolerance · Transparency · Trust · Truthfulness · Understanding · Unity · Variety · Vision · Wisdom

After you have a list of keywords, create your core values statement using the themes from your brainstorming session. There are no rules: while above, Steve Jobs summed up Apple's core values in one sentence, Zappos has ten core values:

1. Deliver WOW Through Service
2. Embrace and Drive Change
3. Create Fun and A Little Weirdness
4. Be Adventurous, Creative, and Open-Minded
5. Pursue Growth and Learning
6. Build Open and Honest Relationships With Communication
7. Build a Positive Team and Family Spirit
8. Do More With Less
9. Be Passionate and Determined
10. Be Humble

To see how Zappos' employees embrace these core values, watch the video they created and posted on their website.

Dog food is yummy

Although I find merit in every keyword listed, I've distilled my core values to their simplest form:

Make awesomeness. Do good.

How do you make awesomeness and do good? You need ambition, balance, collaboration, commitment, fun, and you need every keyword listed to support these actions. Again, there are no rules: your core values can be one sentence or a bulleted list. What matters is being true to yourself and creating core values that others can understand. Before I start any project I ask myself: is there a way to make awesomeness and to do good? If the answer is "yes," I embrace the endeavor because it aligns with my core values. If the answer is "no," I move on to a project that supports my core values.

Unleash your powers

Although every organization will craft different core values, I imagine that you want to be a superhero and that you will define "doing good" (or something similar) as one of your core values. Whether you work by yourself or with a team, you can use the web as a tool to help do good. It can be as simple as giving a free hug, or something a little more complex to help others and help your organization meet the bottom line. Some interesting initiatives that use the web to do good are:

- Yahoo!: How Good Grows
- Desigual: Happy Hunters
- Edge Shave Gel: Anti-irritation campaign

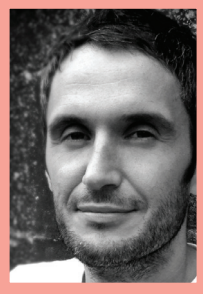
Knowing your underlying desire to return to your Underoos-and-cape-sporting childhood and knowing that you don't always have the opportunity to develop an entire initiative to "do good," remember that as writers, designers, and developers, we can perform superhero acts on a daily basis by making content, design, and development accessible to the greatest number of people. By considering other people's needs, we are intentionally performing acts of kindness—we're doing good. There are many ways to write, design, and develop websites—many of which will be discussed in other 24ways.org articles. As we make content, design, and development decisions—as we develop campaigns and initiatives—we need to keep our core values in mind. It's easy to make a positive difference in the world. Just be the superhero you've always wanted to be. Go forth and make awesomeness.

If you would like to do good today, support The United Nations Children's Fund, an organization that works for children's rights, their survival, development and protection, by purchasing this year's 24 ways Annual 2010 created by Five Simple Steps. All proceeds go to UNICEF.

5

Mike Kus

Beyond Web Mechanics – Creating Meaningful Web Design



Mike Kus is lead designer at Carsonified in Bath UK. Hugely passioniate about the web but with a history in Graphic Design and Illustration for print, Mike employs a more offline approach to his web design. Inspired by anything from an old record sleeve to a billboard poster Mike aspires to break the mold of current web design trends. You can view his work at mikekus.com and at carsonified.com/projects.

It was just over three years ago when I embarked on becoming a web designer, and the first opinion piece about the state of web design I came across was a conference talk by Elliot Jay Stocks called 'Destroy the Web 2.0 Look'. Elliot's presentation was a call to arms, a plea to web designers the world over to stop the endless reproductions of the so called 'Web 2.0 look'.

Three and a half years on from Elliot's talk, what has changed? Well, from an aesthetic standpoint, not a whole lot. The Web 2.0 look has evolved, but it's still with us and much of the web remains filled with cookie cutter websites that bear a striking resemblance to one another. This wouldn't matter so much if these websites were selling comparable services or products, but they're not. They look similar, they follow the same web design trends; their aesthetic style sends out a very similar message, yet they're selling completely different services or products. How can you be communicating effectively with your users when your online book store is visually indistinguishable from an online cosmetic store? This just doesn't make sense.

Being human

As human beings we respond emotionally to everything around us – people, objects, posters, packaging or websites. We also respond in different ways to different kinds of aesthetic design and style. We care about style and aesthetics deeply, whether we realise it or not. Aesthetic design has the power to attract or repel. We often make decisions based purely on aesthetics and style – and don't retailers the world over know it! We connect attitudes and strongly held beliefs to style. Individuals will proudly associate themselves with a certain style or aesthetic because it's an expression of who they are. You know that old phrase, 'Don't judge a book by its cover'? Well, the problem is that people do, so it's important we get the cover right.

Much is made of how to structure web pages, how to create a logical information hierarchy, how to use layout and typography to clearly communicate with your users. It's important, however, not to mistake clarity of information or legibility with getting your message across. Few users actually read websites word by word: it's far more likely they'll just scan the page. If the page is copy-heavy and nothing grabs their attention, they may well just move on. This is why it's so important to create a visual experience that actually means something to the user.

Meaningful design

When we view a poster or website, we make split-second assessments and judgements of what is in front of us. Our first impressions of what a website does or who it is aimed at are provoked by the style and aesthetic of the website. For example, with clever use of colour, typography, graphic design and imagery we can communicate to users that an organisation is friendly, edgy, compassionate, fun or environmentally conscious.

By establishing a website's aesthetic and creating a meaningful visual language, a design is no longer just a random collection of pretty gradients that have been plucked out of thin air. There can be a logic behind the design decisions we make. So, before you slap another generic piece of ribbon or an ultra shiny icon into the top-left corner of your website, think about why you are doing it. If you can't come up with a reason better than "I saw it on another website", it's probably a poor application of style.

Design and style

There are a number of reasons why the web suffers from a lack meaningful design. Firstly, there are too many preconceptions of what a website should look like. It's too easy for designers to borrow styles from other websites, thereby limiting the range of website designs we see on the web. Secondly, many web designers think of aesthetic design as of secondary importance, which shouldn't be the case. Designing websites that are accessible and easy to use is the very least a web designer should be delivering. Ease of use should come as standard – but it's equally important to create meaningful, compelling and beautiful experiences for our users. The aesthetics of your site are part of the design, and to ignore this and play down the role of aesthetic design is just a wasted opportunity.

No compromise necessary

Easy to use, accessible websites and beautiful, meaningful aesthetics are not mutually exclusive. We need to think about who and what we're designing for and ask ourselves why we're applying a certain aesthetic style to our design. If you do this, there's no reason why effective, functional design should come at the expense of jaw-dropping, meaningful aesthetics.

Web designers need to understand the differences between functional design and aesthetic design but, even more importantly, they need to know how to make them work together. It's combining these elements of design successfully that makes for the best web design in the world.

Christian Heilmann

Wrapping Things Nicely with HTML5 Local Storage

Christian Heilmann grew up in Germany and, after a year working for the red cross, spent a year as a radio producer. From 1997 onwards he worked for several agencies in Munich as a web developer. In 2000 he moved to the States to work for Etoys and, after the .com crash, he moved to the UK where he lead the web development department at Agilisys. In April 2006 he joined Yahoo! UK as a web developer and moved on to be the Lead Developer Evangelist for the Yahoo Developer Network. In December 2010 he moved on to Mozilla as Principal Developer Evangelist for HTML5 and the Open Web.

HTML5 is here to turn the web from a web of hacks into a web of applications – and we are well on the way to this goal. The coming year will be totally and utterly awesome if you are excited about web technologies.

This year the HTML5 revolution started and there is no stopping it. For the first time all the browser vendors are rallying together to make a technology work. The new browser war is fought over implementation of the HTML5 standard and not over random additions. We live in exciting times.

Starting with a bang

As with every revolution there is a lot of noise with bangs and explosions, and that's the stage we're at right now. HTML5 showcases are often CSS3 showcases, web font playgrounds, or video and canvas examples.

This is great, as it gets people excited and it gives the media something to show. There is much more to HTML5, though. Let's take a look at one of the less sexy, but amazingly useful features of HTML5 (it was in the HTML5 specs, but grew at such an alarming rate that it warranted its own spec): storing information on the client-side.

Why store data on the client-side?

Storing information in people's browsers affords us a few options that every application should have:

> *You can retain the state of an application – when the user comes back after closing the browser, everything will be as she left it. That's how 'real' applications work and this is how the web ones should, too.*

> *You can cache data – if something doesn't change then there is no point in loading it over the Internet if local access is so much faster*

> *You can store user preferences – without needing to keep that data on your server at all.*

In the past, storing local data wasn't much fun.

The pain of hacky browser solutions

In the past, all we had were cookies. I don't mean the yummy things you get with your coffee, endorsed by the blue, furry junkie in Sesame Street, but the other, digital ones. Cookies suck – it isn't fun to have an unencrypted HTTP overhead on every server request for storing four kilobytes of data in a cryptic format. It was OK for 1994, but really neither an easy nor a beautiful solution for the task of storing data on the client.

Then came a plethora of solutions by different vendors – from Microsoft's userdata to Flash's LSO, and from Silverlight isolated storage to Google's Gears. If you want to know just how many crazy and convoluted ways there are to store a bit of information, check out Samy's evercookie.

Clearly, we needed an easier and standardised way of storing local data.

Keeping it simple – local storage

And, lo and behold, we have one. The local storage API (or session storage, with the only difference being that session data is lost when the window is closed) is ridiculously easy to use. All you do is call a few methods on the window.localStorage object – or even just set the properties directly using the square bracket notation:

```
if('localStorage' in window && window['localStorage'] !== null){
var store = window.localStorage;

// valid, API way
store.setItem('cow','moo');
console.log(
store.getItem('cow')
); // => 'moo'

// shorthand, breaks at keys with spaces
store.sheep = 'baa'
console.log(
store.sheep
); // 'baa'
```

```
// shorthand for all
store['dog'] = 'bark'
console.log(
store['dog']
); // => 'bark'
}
```

Browser support is actually pretty good: Chrome 4+; Firefox 3.5+; IE8+; Opera 10.5+; Safari 4+; plus iPhone 2.0+; and Android 2.0+. That should cover most of your needs. Of course, you should check for support first (or use a wrapper library like YUI Storage Utility or YUI Storage Lite).

The data is stored on a per domain basis and you can store up to five megabytes of data in localStorage for each domain.

Strings attached

By default, localStorage only supports strings as storage formats. You can't store results of JavaScript computations that are arrays or objects, and every number is stored as a string. This means that long, floating point numbers eat into the available memory much more quickly than if they were stored as numbers.

```
var cowdesc = "the cow is of the bovine ilk, "+
"one end is for the moo, the "+
"other for the milk";

var cowdef = {
"ilk":"bovine",
"legs":4,
"udders":4,
"purposes":{
"front":"moo",
"end":"milk"
}
};

window.localStorage.setItem('describecow',cowdesc);
console.log(
window.localStorage.getItem('describecow')
); // => the cow is of the bovine...

window.localStorage.setItem('definecow',cowdef);
console.log(
window.localStorage.getItem('definecow')
); // => [object Object] = bad!
```

This limits what you can store quite heavily, which is why it makes sense to use JSON to encode and decode the data you store:

```
var cowdef = {
"ilk":"bovine",
"legs":4,
"udders":4,
"purposes":{
"front":"moo",
"end":"milk"
}
};

window.localStorage.setItem('describecow',JSON.
stringify(cowdef));
console.log(
JSON.parse(
window.localStorage.getItem('describecow')
)
); // => Object { ilk="bovine", more...}
```

You can also come up with your own formatting solutions like CSV, or pipe | or tilde ~ separated formats, but JSON is very terse and has native browser support.

Some use case examples

The simplest use of localStorage is, of course, storing some data: the current state of a game; how far through a multi-form sign-up process a user is; and other things we traditionally stored in cookies. Using JSON, though, we can do cooler things.

Speeding up web service use and avoiding exceeding the quota

A lot of web services only allow you a certain amount of hits per hour or day, and can be very slow. By using localStorage with a time stamp, you can cache results of web services locally and only access them after a certain time to refresh the data.

I used this technique in my An Event Apart 10K entry, World Info, to only load the massive dataset of all the world information once, and allow for much faster subsequent visits to the site. The following screencast shows the difference:

For use with YQL (remember last year's 24 ways entry?), I've built a small script called YQL localcache that wraps localStorage around the YQL data call. An example would be the following:

```
yqlcache.get({
yql: 'select * from flickr.photos.search where text="santa"',
id: 'myphotos',
cacheage: ( 60*60*1000 ),
callback: function(data) {
console.log(data);
}
});
```

This loads photos of Santa from Flickr and stores them for an hour in the key myphotos of localStorage. If you call the function at various times, you receive an object back with the YQL results in a data property and a type property which defines where the data came from – live is live data, cached means it comes from cache, and freshcache indicates that it was called for the first time and a new cache was primed. The cache will work for an hour (60×60×1,000 milliseconds) and then be refreshed. So, instead of hitting the YQL endpoint over and over again, you hit it once per hour.

Caching a full interface

Another use case I found was to retain the state of a whole interface of an application by caching the innerHTML once it has been rendered. I use this in the Yahoo Firehose search interface, and you can get the full story about local storage and how it is used in this screencast:

The stripped down code is incredibly simple (JavaScript with PHP embed):

```
// test for localStorage support
if((‘localStorage’ in window) && window[‘localStorage’] !==
null){

var f = document.getElementById(‘mainform’);
// test with PHP if the form was sent (the submit button has the
name “sent”)
<?php if(isset($_POST[‘sent’])){?>

// get the HTML of the form and cache it in the property “state”
localStorage.setItem(‘state’,f.innerHTML);
// if the form hasn’t been sent...
<?php }else{ ?>

// check if a state property exists and write back the HTML
cache
if(‘state’ in localStorage){
f.innerHTML = localStorage.getItem(‘state’);
}

<?php } ?>

}
```

Other ideas

In essence, you can use local storage every time you need to speed up access. For example, you could store image sprites in base-64 encoded datasets instead of loading them from a server. Or you could store CSS and JavaScript libraries on the client. Anything goes – have a play.

Issues with local and session storage

Of course, not all is rainbows and unicorns with the localStorage API. There are a few niggles that need ironing out. As with anything, this needs people to use the technology and raise issues. Here are some of the problems:

- Inadequate information about storage quota – if you try to add more content to an already full store, you get a QUOTA_EXCEEDED_ERR and that’s it. There’s a great explanation and test suite for localStorage quota available.
- Lack of automatically expiring storage – a feature that cookies came with. Pamela Fox has a solution (also available as a demo and source code)
- Lack of encrypted storage – right now, everything is stored in readable strings in the browser.

Bigger, better, faster, more!

As cool as the local and session storage APIs are, they are not quite ready for extensive adoption – the storage limits might get in your way, and if you really want to go to town with accessing, filtering and sorting data, real databases are what you’ll need. And, as we live in a world of client-side development, people are moving from heavy server-side databases like MySQL to NoSQL environments.

On the web, there is also a lot of work going on, with Ian Hickson of Google proposing the Web SQL database, and Nikunj Mehta, Jonas Sicking (Mozilla), Eliot Graff (Microsoft) and Andrei Popescu (Google) taking the idea beyond simply replicating MySQL and instead offering Indexed DB as an even faster alternative.

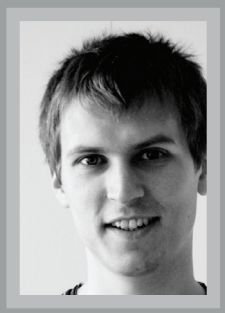
On the mobile front, a really important feature is to be able to store data to use when you are offline (mobile coverage and roaming data plans anybody?) and you can use the Offline Webapps API for that.

As I mentioned at the beginning, we have a very exciting time ahead – let’s make this web work faster and more reliably by using what browsers offer us. For more on local storage, check out the chapter on Dive into HTML5.

7

Drew Neil

Golden Spirals



Drew Neil is an independent web developer and screencast producer. As well as loving all things web, he is totally nerdy about his text editor. He runs the Vimcasts podcast, where he publishes free instructional videos about Vim, and he is currently writing a title for the Pragmatic Programmers, Practical Vim, which will be published in 2011. He says that "Vim's documentation reads like a dictionary; I propose to write a phrasebook."

As building blocks go, the rectangle is not one to overwhelm the designer with decisions. On the face of it, you have two options: you can set the width, and the height. But despite this apparent simplicity, there are combinations of width and height that can look unbalanced. If a rectangle is too tall and slim, it might appear precarious. If it is not tall enough, it may simply look flat. But like a guitar string that's out of tune, you can tweak the proportions little by little until a rectangle feels, as Goldilocks said, just right.

A golden rectangle has its height and width in the golden ratio, which is approximately 1:1.618. These proportions have long been recognised as being aesthetically harmonious. Whether through instruction or by intuition, artists have understood how to exploit these proportions over the centuries. Examples can be found in classical architecture, medieval book construction, and even in the recent #newtwitter redesign.

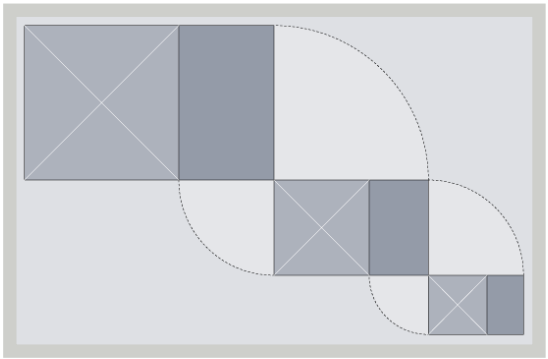
A mathematical curiosity

The golden rectangle is unique, in that if you remove a square section from it, what is left behind is itself a golden rectangle. The removal of a square can be repeated on the rectangle that is left behind, and then repeated again, as many times as you like. This means that the golden rectangle can be treated as a building block for recursive patterns. In this article, we will exploit this property to build a golden spiral, using only HTML and CSS.

The markup

The HTML we'll use for this study is simply a series of nested s.

```
<body>
<div id="container">
<div class="cycle">
<div>
<div>
<div>
<div class="cycle">
<div>
<div>
```



```
<div>
<div class="cycle">
<div>
<div>
<div>
<div class="cycle"></div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</body>
```

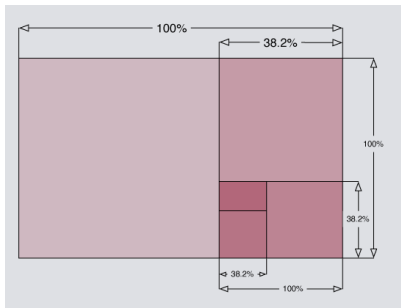
The first of these has the class cycle, and so does every fourth ancestor thereafter. The spiral completes a cycle every four steps, so this class allows styles to be reused on s that appear at the same position in each cycle.

Golden proportions

To create our spiral we are going to exploit the unique properties of the golden rectangle, so our first priority is to ensure that we have a golden rectangle to begin with. If we pick a length for the short edge – say, 288 pixels – we can then calculate the length of the long edge by multiplying this value by 1.618. In this case, 288 × 1.618 = 466, so our starting point will be a with these properties:

```
#container > div {
width: 466px;
height: 288px; }
```

The greater than symbol is used here to single out the immediate child of the #container element, without affecting the grandchild or any of the more distant descendants.



We could go on to specify the precise pixel dimensions of every child element, but that means doing a lot of sums. It would be much easier if we just specified the dimensions for each element as a percentage of the width and height of its parent. This also has the advantage that if you change the size of the outermost container, all nested elements would be resized automatically – something that we shall exploit later.

The approximate value of 38.2% can be derived from (100 × 1 – phi) ÷ phi, where the Greek letter phi (ϕ) stands for the golden ratio. The value of phi can be expressed as phi = (1 + √5) ÷ 2, which is approximately 1.618. You don't have to understand the derivation to use it. Just remember that if you start with a golden rectangle, you can slice 38.2% from it to create a new golden rectangle.

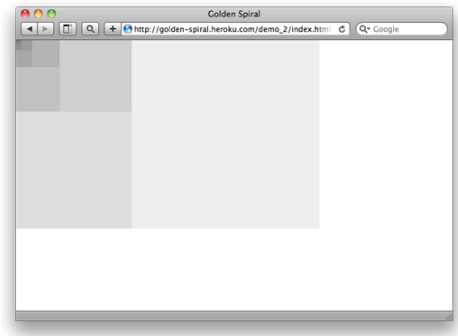
This can be expressed in CSS quite simply:

```
.cycle,
.cycle > div > div {
height: 38.2%;
width: 100%; }

.cycle > div,
.cycle > div > div > div {
width: 38.2%;
height: 100%; }
```

You can see the result so far by visiting Demo One. With no borders or shading, there is nothing to see yet, so let's address that next.

Shading with transparency

We'll need to apply some shading to distinguish each segment of the spiral from its neighbours. We could start with a white background, then progress through shades of grey: #eee, #ddd, #ccc and so on, but this means hard-coding the background-color for every element. A more elegant solution would be to use the same colour for every element, but to make each one slightly transparent.



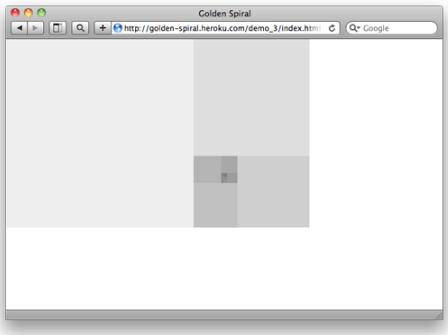
The nested s that we are working with could be compared to layers in Photoshop. By applying a semi-transparent shade of grey, each successive layer can build on top of the darker layers beneath it. The effect accumulates, causing each successive layer to appear slightly darker than the last. In his 2009 article for 24 ways, Drew McLellan showed how to create a semi-transparent effect by working with RGBA colour. Here, we'll use the colour black with an alpha value of 0.07.

```
#container div { background-color: rgba(0,0,0,0.07) }
```

Note that I haven't used the immediate child selector here, which means that this rule will apply to all elements inside the #container, no matter how deeply nested they are. You can view the result in Demo Two. As you can see, the golden rectangles alternate between landscape and portrait orientation.

Positioning on the compass points

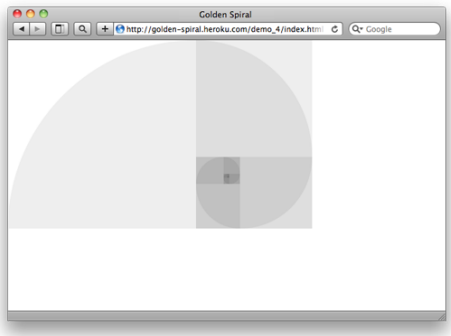
The effect is already quite attractive, with each nested rectangle drilling deeper and deeper into the top left corner. But to create a golden spiral, we are going to have to position the rectangles so that they line up against the north, east, south and then west edges of their respective parents. This can easily be achieved using absolute positioning:




```
.cycle {
position: absolute;
top: 0; }

.cycle > div {
position: absolute;
right: 0; }

.cycle > div > div {
position: absolute;
bottom: 0; }

.cycle > div > div > div {
position: absolute;
left: 0; }
```

Now we're getting warm. Rather than disappearing into the top-left corner, the rectangles are drilling towards the centre in a kind of vortex.

Rounding the corners



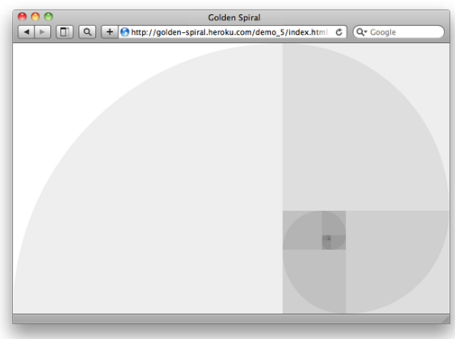
A spiral formation is beginning to taking shape, but you have to squint a bit to see it. If we could just round off the corners of each square, we would have our golden spiral. The border-radius property makes this possible.

We are using percentages to set the dimensions of each div element, so we don't know the precise values in pixels. The CSS3 specification indicates that a percentage can be used to set the border-radius property, but using percentages does not achieve consistent results in browsers today. Luckily, if you specify a border-radius in pixels using a value that is greater than the width and height of the element, then the resulting curve will use the shorter length side as its radius. This produces exactly the effect that we want, so we'll use an arbitrarily high value of 10,000 pixels for each border-radius:

```
.cycle {
border-radius: 0px;
border-bottom-left-radius: 10000px; }

.cycle > div {
border-radius: 0px;
border-bottom-right-radius: 10000px; }

.cycle > div > div {
border-radius: 0px;
border-top-right-radius: 10000px; }

.cycle > div > div > div {
border-radius: 0px;
border-top-left-radius: 10000px; }
```

Note that the specification for the border-radius property is still in flux, so it is advisable to use vendor-specific prefixes. I have omitted them from the example above for the sake of clarity, but if you view source on Demo Four then you'll see that the actual styles are not quite as brief.

Filling the available space



We have created an approximation of the Golden Spiral using only HTML and CSS. Neat! It's a shame that it occupies just a fraction of the available space. As a finishing touch, let's make the golden spiral expand or contract to use the full space available to it.

Ideally, the outermost container should use the full available width or height that could accomodate a rectangle of golden proportions. This behaviour is available for background images using the background-size: contain; property, but I know of no way to make block level HTML elements behave in this fashion (if I'm missing something, please enlighten me). Where CSS fails to deliver, JavaScript can usually provide a workaround. This snippet requires jQuery:

```
$(document).ready(function() {
var phi = (1 + Math.sqrt(5))/2;

$(window).resize(function() {
var goldenWidth = windowWidth = $(this).width(),
goldenHeight = windowHeight = $(this).height();
```

```
if (windowWidth/windowHeight &gt; phi) {
// panoramic viewport - use full height
goldenWidth = windowHeight * phi;
} else {
// portrait viewport - use full width
goldenHeight = windowWidth / phi;
};

$(&quot;#container &gt; div.cycle&quot;)
.width(goldenWidth)
.height(goldenHeight);

}).resize();

});
```

You can view the result by visiting Demo Five.

Is it just me, or can you see an elephant in there?

You can probably think of many ways to enhance this further, but for this study we'll leave it there. It has been a good excuse to play with proportions, positioning and the immediate child selector, as well as new CSS3 features such as border-radius and RGBA colours. If you are not already designing with golden proportions, then perhaps this will inspire you to begin.

8

Scott Schiller

“Probably, Maybe, No”: The State of HTML5 Audio

Scott Schiller has been enjoying building web things since 1995. He also has a fondness for Creedence and the occasional White Russian.

Scott's personal site is probably best known for its DHTML Arkanoid remake (2002), Snowstorm and holiday christmas light-smashing distractions and other random JavaScript + CSS-based experiments.

With the hype around HTML5 and CSS3 exceeding levels not seen since 2005’s Ajax era, it’s worth noting that the excitement comes with good reason: the two specifications render many years of feature hacks redundant by replacing them with native features. For fun, consider how many CSS2-based rounded corners hacks you’ve probably glossed over, looking for a magic solution. These days, with CSS3, the magic is border-radius (and perhaps some vendor prefixes) followed by a coffee break.

CSS3’s border-radius, box-shadow, text-shadow and gradients, and HTML5’s <canvas>, <audio> and <video> are some of the most anticipated features we’ll see put to creative (ab)use as adoption of the ‘new shiny’ grows. Developers jumping on the cutting edge are using subsets of these features to little detriment, in most cases. The more popular CSS features are design flourishes that can degrade nicely, but the current audio and video implementations in particular suffer from a number of annoyances.

The new shiny: how we got here

Sound involves one of the five senses, a key part of daily life for most – and yet it has been strangely absent from HTML and much of the web by default. From a simplistic perspective, it seems odd that HTML did not include support for the full multimedia experience earlier, despite the CD-ROM-based craze of the early 1990s. In truth, standards like HTML can take much longer to bake, but eventually deliver the promise of a lowered barrier to entry, consistent implementations and shiny new features now possible ‘for free’ just about everywhere.

<img> was introduced early and naturally to HTML, despite having some opponents at the time. Perhaps <audio> and <video> were avoided, given the added technical complexity of decoding various multi-frame formats, plus the hardware and bandwidth limitations of the era. Perhaps there were quarrels about choosing a standard format or – more simply – maybe these elements just weren’t considered to be applicable to the HTML-based web at the time. In any event, browser plugins from programs like RealPlayer and QuickTime eventually helped to fill the in-page audio/video gap, handling <object> and <embed> markup which pointed to .wav, .avi, .rm or .mov files. Suffice it to say, the experience was inconsistent at best and, on the standards side of the fence right now, so is HTML5 in terms of audio and video.

<audio>: the theory

As far as HTML goes, the code for <audio> is simple and logical. Just as with <img>, a src attribute specifies the file to load. Pretty straightforward – sounds easy, right?

```
<audio src="mysong.ogg" controls>
<!-- alternate content for unsupported case -->
Download <a href="mysong.ogg">mysong.ogg</a>;
</audio>
```

Ah, if only it were that simple. The first problem is that the OGG audio format, while 'free', is not supported by some browsers. Conversely, nor is MP3, despite being a de facto standard used in all kinds of desktop software (and hardware). In fact, as of November 2010, no single audio format is commonly supported across all major HTML5-enabled browsers.

What you end up writing, then, is something like this:

```
<audio controls>
<source src="mysong.mp3" />
<source src="mysong.ogg" />
<!-- alternate content for unsupported case, maybe Flash, etc.
-->
Download <a href="mysong.ogg">mysong.ogg</a> or <a href="mysong.
mp3">mysong.mp3</a>
</audio>
```

Keep in mind, this is only a 'first class' experience for the HTML5 case; also, for non-supported browsers, you may want to look at another inline player (object/embed, or a JavaScript plus Flash API) to have inline audio. You can imagine the added code complexity in the case of supporting 'first class' experiences for older browsers, too.

<audio>: the caveats

With <img>, you typically don't have to worry about format support – it just works – and that's part of what makes a standard wonderful. JPEG, PNG, BMP, GIF, even TIFF images all render just fine if for no better reason, perhaps, than being implemented during the 'wild west' days of the web. The situation with <audio> today reflects a very different – read: business-aware – environment in 2010. (Further subtext: There's a lot of [potential] money involved.) Regrettably, this is a collision of free and commercial interests, where the casualty is ultimately the user. Second up in the casualty list is you, the developer, who has to write additional code around this fragmented support.

The HTML5 audio API as implemented in JavaScript has one of the most un-computer-like responses I've ever seen, and inspired the title of this post. Calling new Audio().canPlayType('audio/mp3'), which queries the system for format support according to a MIME type, is supposed to return one of "probably", "maybe", or "no". Sometimes, you'll just get a null or empty string, which is also fun. A "maybe" response does not guarantee that a format will be supported; sometimes audio/mp3 gives "maybe," but then audio/mpeg; codecs="mp3" will give a more-solid "probably" response. This can vary by browser or platform, too, depending on native support – and finally, the user may also be able to install codecs, extending support to include other formats. (Are you excited yet?)

Damn you, warring formats!

New market and business opportunities go hand-in-hand with technology developments. What we have here is certainly not failure to communicate; rather, we have competing parties shouting loudly in public in attempts to influence mindshare towards a de facto standard for audio and video. Unfortunately, the current situation means that at least two formats are effectively required to serve the majority of users correctly.

As it currently stands, we have the free and open source software camp of OGG Vorbis/WebM and its proponents (notably, Mozilla, Google and Opera in terms of browser makers), up against the non-free, proprietary and 'closed' camp of MP3 and MPEG4/HE-AAC/H.264 – which is where you'll find commitments from Apple and Microsoft, among others. Apple is likely in with H.264 for the long haul, given its use of the format for its iTunes music store and video offerings.

It is generally held that H.264 is a technically superior format in terms of file size versus quality, but it involves intellectual property and, in many use cases, requires licensing fees. To be fair, there is a business model with H.264 and much has been invested in its development, but this approach is not often the kind that wins over the web. On that front, OGG/WebM may eventually win for being a 'free' format that does not involve a licensing scheme.

Closed software and tools ideologically clash with the open nature of the web, which exists largely thanks to free and open technology. Because of philosophical and business reasons, support for audio and video is fragmented across browsers adopting HTML5 features. It does not help that a large amount of audio and video currently exists in non-free MP3 and MPEG-4 formats. Adoption of <audio> and <video> may be slowed, since it is more complex than <img> and may feel 'broken' to developers when edge cases are encountered. Furthermore, the HTML5 spec does not mandate a single required format. The end result is that, as a developer, you must currently provide at least both MP3 and OGG, for example, to serve most existing HTML5-based user agents.

Transitioning to <audio>

There will be some growing pains as developers start to pick up the new HTML5 shiny, while balancing the needs of current and older agents that don't support either <audio> or the preferred format you may choose (for example, MP3). In either event, Flash or other plugins can be used as done traditionally within HTML4 documents to embed and play the relevant audio.

Ideally, HTML5 audio should be used whenever possible with Flash as the backup option. A few JavaScript/Flash-based audio player projects exist which balance the two; in attempting to tackle this problem, I develop and maintain SoundManager 2, a JavaScript sound API which transparently uses HTML5 Audio() and, if needed, Flash for playing audio files. The internals can get somewhat ugly, but the transition between HTML4 and HTML5 is going to be just that – and even with HTML5, you will need some form of format fall-back in addition to graceful degradation.

It may be safest to fall back to MP3/MP4 formats for inline playback at this time, given wide support via Flash, some HTML5-based browsers and mobile devices. Considering the amount of MP3/MP4 media currently available, it is wiser to try these before falling through to a traditional file download process.

Early findings

Here is a brief list of behavioural notes, annoyances, bugs, quirks and general weirdness I have found while playing with HTML5-based audio at time of writing (November 2010):

Apple ipad/iphone (ios 4, ipad 3.2+)

- Only one sound can be played at a time. If a second sound starts, the first is stopped.
- No auto-play allowed. Sounds follow the pop-up window security model and can only be started from within a user event handler such as onclick/touch, and so on. Otherwise, playback attempts silently fail.
- Once started, a sequence of sounds can be created or played via the 'finish' event of the previous sound (for example, advancing through a playlist without interaction after first track starts).
- iPad, iOS 3.2: Occasional 'infinite loop' bug seen where audio does not complete and stop at a sound's logical end – instead, it plays again from the beginning. Might be specific to example file format (HE-AAC) encoded from iTunes.

Apple safari, os x snow leopard 10.6.5

- Critical bug: Safari 4 and 5 intermittently fail to load or play HTML5 audio on Snow Leopard due to bug(s) in QuickTime X and/or other underlying frameworks. Known Apple 'radar' bug: bugs.webkit.org #32159 (see also, test case.) Amusing side note: Safari on Windows is fine.

Apple safari, windows

- Food for thought: if you download "Safari" alone on Windows, you will not get HTML5 audio/video support (tested in WinXP). You need to download "Safari + QuickTime" to get HTML5 audio/video support within Safari. (As far as I'm aware, Chrome, Firefox and Opera either include decoders or use system libraries accordingly. Presumably IE 9 will use OS-level APIs.)

General quirks

- Seeking and loading, 'progress' events, and calculating bytes loaded versus bytes total should not be expected to be linear, as users can arbitrarily seek within a sound. It appears that some support for HTTP ranges exists, which adds a bit of logic to UI code. Browsers seem to vary slightly in their current implementations of these features.
- The onload event of a sound may be of little relevance, if non-linear loading is involved (see above note re: seeking).
- Interestingly (perhaps I missed it), the current spec does not seem to specify a panning or left/right channel mix option.
- The preload attribute values may vary slightly between browsers at this time.

Upcoming shiny: HTML5 Audio Data API

The HTML5 audio spec does a good job covering the basics of playback, but did not initially get into manipulation or generation of audio on-the-fly, something Flash has had for a number of years now. What if JavaScript could create, monitor and change audio dynamically, like a sort of audio <canvas> element? With that kind of capability, many dynamic audio processing features become feasible and, when combined with other media, can make for some impressive demos.

What started as a small idea among a small group of audio and programming enthusiasts grew to inspire a W3C audio incubator group, and continued to establish the Mozilla Audio Data API. Contributors wrote a patch for Firefox which was reviewed and revised, and is now slated to be in the public release of Firefox 4. Some background and demos are also detailed in an article from the BBC R&D blog.

There are plenty of live demos to see, which give an impression of the new creative ideas this API enables. Many concepts are not new in themselves, but it is exciting to see this sort of thing happening within the native browser context.

Mozilla is not alone in this effort; the WebKit folks are also working on a JavaScriptAudioNode interface, which implements similar audio buffering and sample elements.

The future?

It is my hope that we'll see a common format emerge in terms of support across the major browsers for both audio and video; otherwise, support will continue to be fragmented and mildly frustrating to develop for, and that can impede growth of the feature. It's a big call, but if <img> had lacked a common format back in the wild west era, I doubt the web would have grown to where it is today.

Complaints and nitpicks aside, HTML5 brings excellent progress on the browser multimedia front, and the first signs of native support are a welcome improvement given all audio and video previously relied on plugins. There is good reason to be excited. While there is room for more, support could certainly be much worse – and as tends to happen with specifications, the implementations targeting them should improve over time.

Note: Thanks to Nate Koechley, who suggested the Audio().canPlayType() response be part of the article title.

9

Hannah Donovan

Extreme Design

Originally from Canada's icy north, Hannah Donovan is creative director at Last.fm, where she's worked for the last four years. Before moving to London to work at Last.HQ, she designed websites with Canada's largest youth-focused agency working on brands such as Hershey, Heineken and Bic. Previous to that, Hannah designed for Street Print, a Canada Research Council funded, open source web app for sharing and archiving printed ephemera. Hannah also plays the cello with an orchestra and draws monsters.

Recently, I set out with twelve other designers and developers for a 19th century fortress on the Channel Island of Alderney. We were going to /dev/fort, a sort of band camp for geeks. Our cohort's mission: to think up, build and finish something – without readily available internet access. Wait, no internet?

Well, pretty much. As the creators of /dev/fort James Aylett and Mark Norman Francis put it: "Imagine a place with no distractions – no IM, no Twitter". But also no way to quickly look up a design pattern, code sample or source material. Like packing for camping, /dev/fort means bringing everything you'll need on your back or your hard drive: from long johns to your favourite icon set.

We got to work the first night discussing ideas for what we wanted to build. By the time breakfast was cleared up the next morning, we'd settled on Russ's idea to make the Apollo 13 (PDF) transcript accessible. Days two and three were spent collaboratively planning (KJ style) what features we wanted to build, and unravelling the larger UX challenges of the project. The next five days were spent building it. Within 36 hours of touchdown at Southampton Airport, we launched our creation: spacelog.org

The weather was cold, the coal fire less than ideal, food and supplies a hike away, and the process lightning-fast. A week of designing under extreme circumstances called for an extreme process. Some of this was driven by James's and Norm's experience running these things, but a lot of it materialised while we were there – especially for our three-strong design team (myself, Gavin O' Carroll and Chris Govias) who, though we knew each other, had never worked together as a group in this kind of scenario before.

The outcome was a pretty spectacular process, with a some key takeaways useful for any small group trying to build something quickly.

What it's like inside the fort

/dev/fort has the pressure and pace of a hack day without being a hack day – primarily, no workshops or interruptions, but also a different mentality. While hack days are typically developer-driven with a 'hack first, design later (if at all)' attitude, James was quick to tell the team to hold off from writing any code until we had a plan. This put a healthy pressure on the design and product folks to slash through the UX problems before we started building.

While the fort had definitely more of a hack day feel, all of us were familiar with Agile methods, so we borrowed a few useful techniques such as morning stand-ups and an emphasis on teamwork. We cut some really good features to make our launch date, and chunked the work based on user goals, iterating as we went.

What made this design process work?

A golden ratio of teams

My personal experience both professionally and in free-form situations like this, is a tendency to get/hire a designer. Leaders of businesses, founders of start-ups, organisers of events: one designer is not enough! Finding one ace-blooded designer who can 'do everything' will always result in bottleneck and burnout. Like the nuances between different development languages, design is a multifaceted discipline, and very few can claim to be equally strong in every aspect. Overlap in skill set will result in a stronger, more robust interface.

More importantly, however, having lots of designers to go around meant that we all had the opportunity to pair with developers, polishing the details that don't usually get polished. As soon as we launched, the public reception of the design and UX was overwhelmingly positive (proof!). But also, a lot of people asked us who the designer was, attributing it to one person.

While it's important to note that everyone in our team was multitalented (and could easily shift between roles, helping us all stay unblocked), the golden ratio James and Norm devised was two product/developer folks, three interaction designers and eight developers.

Equality inside the fortress walls

Something magical about the fort is how everyone leaves the outside world on the drawbridge. Job titles, professional status, Twitter followers, and so on. Like scout camp, a mutual respect and trust is expected of all the participants. Like extreme programming, extreme design requires us all to be equal partners in a collaborative team. I think this is especially worth noting for designers; our past is filled with the clear hierarchy of the traditional studio system which, however important for taste and style, seems less compatible with modern web/software development methods.

Being equal doesn't mean being the same, however. We established clear roles and teams for ourselves on the second day, deferring to that person when a decision needed to be made. As the interface coalesced, the designers and developers took ownership over certain parts to ensure the details got looked after, while staying open to ideas and revisions from the rest of the cohort.

Create a space where everyone who enters is equal, but be sure to establish clear roles. Even if it's just for a short while, the environment will be beneficial.

Hang your heraldry from the rafters

Forts and castles are full of lore: coats of arms; paintings of battles; suits of armour. It's impossible not to be surrounded by these stories, words and ways of thinking. Like the whiteboards on the walls, putting organisational lore in your physical surroundings makes it impossible not to see.

Ryan Alexander brought some of those static-cling whiteboard sheets which were quickly filled with use cases; IA; team roles; and, most importantly, a glossary. As soon as we started working on the project, we realised we needed to get clear on what certain words meant: what was a logline, a range, a phase, a key moment? Were the back-end people using these words in the same way design and product was? Quickly writing up a glossary of terms meant everyone was instantly speaking the same language. There was no "Ah, I misunderstood because in the data structure x means y" or, even worse, accidental seepage of technical language into the user interface copy.

Put a glossary of your internal terminology somewhere big and fat on the wall. Stand around it and argue until you agree on what it says. Leave it up; don't underestimate the power of ambient communication and physical reference.

Plan more, download less

While internet is forbidden inside the fort, we did go on downloading expeditions: NASA photography; code documentation; and so on. The project wouldn't have been possible without a few trips to the web. We had two lists on the wall: groceries and supplies; internets – "loo roll; Tom Stafford photo".

This changed our usual design process, forcing us to plan carefully and think of what we needed ahead of time. Getting to the internet was a thirty-minute hike up a snow covered cliff to the town airport, so you really had to need it, too. For the visual design, especially, this resulted in more focus up front, and communication between the designers on what assets we required. It made us make decisions earlier and stick with them, creating less distraction and churn later in the process.

Try it at home: unplug once you've got the things you need. As an artist, it's easier to let your inner voice shine through if you're not looking at other people's work while creating.

Social design

Finally, our design team experimented with a collaborative approach to wireframing. Once we had collectively nailed down use cases, IA, user journeys and other critical artefacts, we tried a pairing approach. One person drew in Illustrator in real time as the other two articulated what to draw. (This would work equally well with two people, but with three it meant that one of us could jump up and consult the lore on the walls or clarify a technical detail.) The result: we ended up considering more alternatives and quickly rallying around one solution, and resolved difficult problems more quickly.

At a certain stage we discovered it was more efficient for one person to take over – this happened around the time when the basic wireframes existed in Illustrator and we'd collectively run through the use cases, making sure that everything was accounted for in a broad sense. At this point, take a break, go have a beer, and give yourself a pat on the back.

Put the files somewhere accessible so everyone can use them as their base, and divide up the more detailed UI problems, screens or journeys. At this level of detail it's better to have your personal headspace.

Gavin called this 'social design'. Chatting and drawing in real time turned what was normally a rather solitary act into a very social process, with some really promising results. I'd tried something like this before with product or developer folks, and it can work – but there's something really beautiful about switching places and everyone involved being equally quick at drawing. That's not something you get with non-designers, and frequent swapping of the 'driver' and 'observer' roles is a key aspect to pairing.

Tackle the forest collectively and the trees individually – it will make your framework more robust and your details more polished. Win/win.

The return home

Grateful to see a 3G signal on our phones again, our flight off the island was delayed, allowing for a flurry of domain name look-ups, Twitter catch-up, and e-mails to loved ones. A week in an isolated fort really made me appreciate continuous connectivity, but also just how unique some of these processes might be.

You just never know what crazy place you might be designing from next.

10

Veerle Pieters

Optimize Your Web Design Workflow

Veerle Pieters is a graphic/web designer based in Deinze, Belgium. Starting in '92 as a freelance graphic designer, Veerle worked on print design before focussing more on webdesign and GUI (since '96). She runs her own design studio Duoh! together with Geert Leyseele. Veerle has been blogging since 2003 and is considered number 39 on the list of "NxE's Fifty Most Influential 'Female' Bloggers".

I'm not sure about you, but I still favour using Photoshop to create my designs for the web. I agree that this application, even with its never-ending feature set, is not the perfect environment to design websites in. The ideal application doesn't exist yet, however, so until it does it's maybe not such a bad idea to investigate ways to optimize our workflow.

Why use Photoshop?

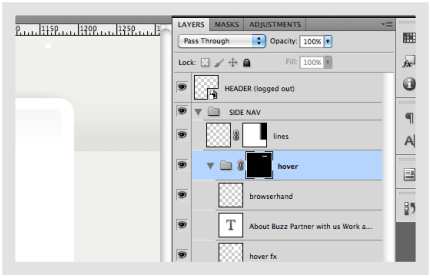
It will probably not come as a surprise if I say that Photoshop and Illustrator are the applications that I know best and feel most comfortable and creative in. Some people prefer Fireworks for web design. Even though I understand people's motivations, I still prefer Photoshop personally. On the occasions that I gave Fireworks a try, I ended up just using the application to export my images as slices, or to prepare a dummy for the client. For some reason, I've never been able to find my way in that app. There were always certain things missing that could only be done in either Photoshop or Illustrator, which bothered me.

Why not start in the browser?

These days, with CSS3 styling emerging, there are people who find it more efficient to design in the browser. I agree that at a certain point, once the basic design is all set and defined, you can jump right into the code and go from there. But the actual creative part, at least for me, needs to be done in an application such as Photoshop.

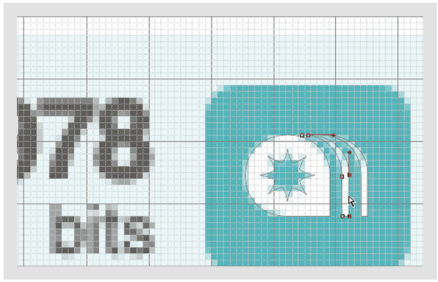
As a designer I need to be able to create and experiment with shapes on the fly, draw things, move them around, change colours, gradients, effects, and so on. I can't see me doing this with code. I'm sure if I switch to markup too quickly, I might end up with a rather boxy and less interesting design. Once I start playing with markup, I leave my typical 'design zone'. My brain starts thinking differently – more rational and practical, if you know what I mean; I start to structure and analyse how to mark up my design in the most efficient semantic way. When I design, I tend to let that go for a bit. I think more freely and not so much about the limitations, as it might hinder my creativity. Now that you know my motivations to stick with Photoshop for the time being, let's see how we can optimize this beast.

Optimize your Photoshop workspace



In Photoshop CS5 you have a few default workspace options to choose from which can be found at the top right in the Application Bar (Window › Application Bar). You can set up your panels and palettes the way you want, starting from the 'Design' workspace option, and save this workspace for future web work. Here is how I have set up things for when I work on a website design:
I have the layers palette open, and I keep the other palettes collapsed. Sometimes, when space permits, I open them all. For designers who work both on print and web, I think it's worthwhile to save a workspace for both, or for when you're doing photo retouching.

Set up a grid



When you work a lot with Shape Layers like I do, it's really helpful to enable the Grid (View › Show › Grid) in combination with Snap to Grid (View › Snap To › Grid). This way, your vector-based work will be pixel-sharp, as it will always snap to the grid, and so you don't end up with blurry borders.

To set up your preferred grid, go to Preferences › Guides, Grids and Slices. A good setting is to use 'Gridline Every 10 pixels' and 'Subdivision 10'. You can switch it on and off at any time using the shortcut Cmd/Ctrl + '.

It might also help to turn on Smart Guides (View › Show › Smart Guides).

Another important tip for making sure your Shape Layer boxes and other shapes are perfectly aligned to the pixel grid when you draw them is to enable Snap to Pixels. This option can be enabled in the Application bar in the Geometry options dropdown menu when you select one of the shape tools from the toolbox.

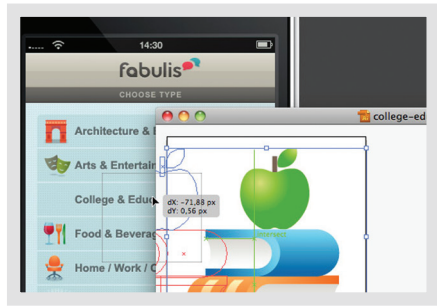
Use Shape Layers

To keep your design as flexible as possible, it's a good thing to use Shape Layers wherever you can as they are scalable. I use them when I design for the iPhone. All my icons, buttons, backgrounds, illustrative graphics – they are all either Smart Objects placed from Illustrator, or Shape Layers. This way, the design is scalable for the retina display.

Use Smart Objects

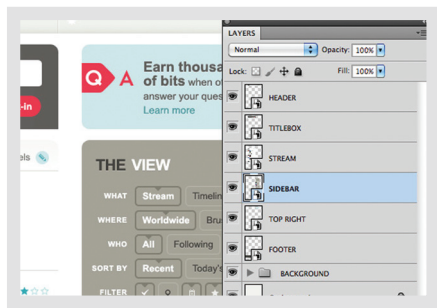
Among the things I like a lot in Photoshop are Smart Objects. Smart Objects preserve an image's source content with all its original characteristics, enabling you to perform non-destructive editing to the layer. For me, this is the ideal way of making my design flexible.

For example, a lot of elements are created in Illustrator and are purely vector-based. Placing these elements in Photoshop as Smart Objects (via copy and paste, or dragging from Illustrator into Photoshop) will keep them vector-based and scalable at all times without loss of quality.



Another way you could use Smart Objects is whenever you have repeating elements; for example, if you have a stream or list of repeating items. You could, for instance, create one, two or three different items (for the sake of randomness), make each one a Smart Object, and repeat them to create the list. Then, when you have to update, you need only change the Smart Object, and the update will be automatically applied in all its linked instances.

Turning photos into Smart Objects before you resize them is also worth considering – you never know when you'll need that same photo just a bit bigger. It keeps things more flexible, as you leave room to resize the image at a later stage. I use this in combination with the Smart Filters a lot, as it gives me such great flexibility.

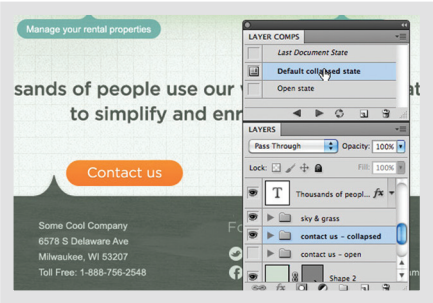


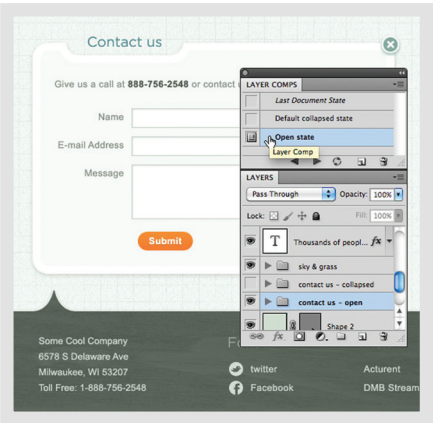
I usually use Smart Objects as well for the main sections of a web page, which are repeated across different pages of a site. So, for elements such as the header, footer and sidebar, it can be handy for bigger projects that are constantly evolving, where you have to create a lot of different pages in Photoshop.

You could save a template page that has the main sections set up as Smart Objects, always in their latest version. Each time you need to create new page, you can start from that template file. If you need to update an existing page because the footer (or sidebar, or header) has been updated, you can drag the updated Smart Object into this page. Although, do I wish Photoshop made it possible to have Smart Objects live as separate files, which are then linked to my different pages. Then, whenever I update the Smart Object, the pages are automatically updated next time I open the file. This is how linked files work in InDesign and Illustrator when you place a external image.

Use Layer Comps

In some situations, using Layer Comps can come in handy. I try to use them when the design consists of different states; for example, if there are hidden and show states of certain content, such as when content is shown after clicking a certain button. It can be useful to create a Layer Comp for each state. So, when you switch between the two Layer Comps, you're switching between the two states.
It's OK to move or hide content in each of these states, as well as apply different layer styles. I find this particularly useful when I need to save separate JPEG versions of each state to show to the client, instead of going over all the eye icons in the layers palette to turn the layers' visibility on or off.





Create a set of custom colour swatches

I tend to use a distinct colour Swatches palette for each project I work on, by saving a separate Swatches palette in project's folder (as an .ase file). You can do this through the palette's dropdown menu, choosing Save Swatches for Exchange.

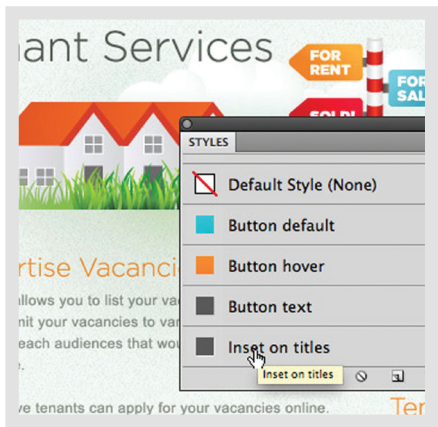
Selecting this option gives you the flexibility to load this palette in other Adobe applications like Illustrator, InDesign or Fireworks. This way, you have the colours of any particular project at hand. I name each colour, using the hexadecimal values.

Loading, saving or changing the view of the Swatches palette can be done via the palette's dropdown menu. My preferred view is 'Small List' so I can see the hexadecimal values or other info I have added in the description.

I do wish Photoshop had the option of loading several different Styles palettes, so I could have two or more of them open at the same time, but each as a separate palette. This would be handy whenever I switch to another project, as I'm usually working on more than one project in a day. At the moment, you can only add a set of colours to the palette that is already open, which is frustrating and inefficient if you need to update the palette of a project separately.

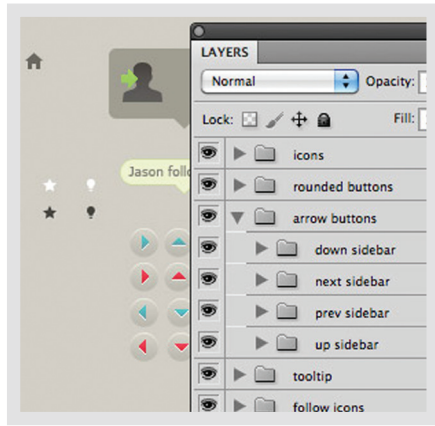
Create a set of custom Styles

Just like saving a Swatches palette, I also always save the styles I apply in the Styles palette as a separate Styles file in the project's folder when I work on a website design or design for iPhone/iPad. During the design process, I can save it each time styles are added. Again, though, it would be great if we could have different Styles palettes open at the same time.



Use a scratch file

What I also find particularly timesaving, when working on a large project, is using some kind of scratch file. By that, I mean a file that has elements in place that you reuse a lot in the general design. Think of buttons, icons and so on, that you need in every page or screen design. This is great for both web design work and iPad/iPhone work.



Use the slice tool

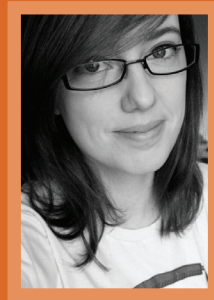
This might not be something you think of at first, because you probably associate this way of working with 'old-school' table-based techniques. Still, you can apply your slice any way you want, keeping your way of working in mind. Just think about it for a second. If you use the slice tool, and you give each slice its proper filename, you don't have to worry about it when you need to do updates on the slice or image. Photoshop will remember what the image of that slice is called and which 'Save for Web' export settings you've used for it. You can also export multiple slices all at once, or export only the ones you need using 'Save selected slices'.

I hope this list of optimization tips was useful, and that they will help you improve and enjoy your time in Photoshop. That is, until the ultimate web design application makes its appearance. Somebody is building this as we speak, right?

11

Frances Berriman

Documentation-Driven Design for APIs



Frances Berriman is a London based front end web developer for Nature Publishing Group, a microformats.org busy-body and can usually be found muttering about the state of the web on her blog at fberriman.com

Documentation is like gift wrapping. It seems like superfluous fluff, but your family tends to be rather disappointed when their presents arrive in supermarket carrier bags, so you have to feign some sort of attempt at making your gift look enticing. Documentation doesn't have to be all hard work and sellotaping yourself to a table – you can make it useful and relevant.

Documentation gets a pretty rough deal. It tends to get left until the end of a project, when some poor developer is assigned the 'document project' ticket and wades through each feature of Whizzy New API 3.0 and needs to recall exactly what each method is meant to do. That's assuming any time is left for documentation at all. The more common outcome resembles last minute homework scribbled on a post-it note, where just the bare bones of what's available are put out for your users, and you hope that you'll spot the inconsistencies and mistakes before they do.

Wouldn't it be nicer for everyone if you could make documentation not only outstanding for your users, but also a valuable tool for your development team – so much so that you couldn't imagine writing a line of code before you'd documented it?

Documentation needs to have three main features:

- It should have total coverage and document all the features of your project. Private methods should be documented for your developers, and public features need to be available to your users.
- It should be consistent – a user should know what to expect from your documentation, and terminology should be accurate to your language.
- It should be current – and that means staying accurate as new versions of your code base are released.

But you can also get these bonuses:

- Act as a suggested specification – a guide that will aid a developer in making something consistent and usable.
- It can test your API quality.
- It can enhance the communication skills within your development team.

So how do we get our documentation to be rich and full of features, instead of a little worn out like Boxing Day leftovers?

Write your documentation first

When I say first, I mean first. Not after you've started writing the code. Not even after you've started writing your unit tests. First. You may or may not have been provided with a decent specification, but the first job should be to turn your requirements for a feature into documentation.

It works best when it takes the form of in-code comments. It works even better when your in-code comments take a standard documentation format that you can later use to generate published documentation for your users. This has the benefit of immediately making your docs as version controlled as your code-base, and it saves having to rewrite, copy or otherwise harass your docs into something legible later on.

Almost all languages have a self-documentation format these days. My choice of format for JavaScript is JSDocToolkit, and the sort of things I look for are the ability to specify private and public methods, full options object statements (opts as Opts only is a no-no), and the ability to include good examples.

So, our example for today will be a new festive feature for a JavaScript API. We've been asked to specify a sled for Santa to get around the world to give out toys:

> *Santa needs to be able to travel around the world in one night to deliver toys to children, and he'll need some reindeer to pull his sled.*

As documentation, it would look like:

```
/**
@name Sled
@extends Vehicle
@constructor
@description Create a new sled to send Santa around the world to
deliver toys to good kids.
@param {Object} [opts] Options
@param {number} [opts.capacity='50'] Set the capacity of the
sled
@param {string} [opts.pilot='santa'] The pilot of the sled.
@example
// Create a sled and specify some reindeer.
new Sled().reindeer(['Dasher', 'Dancer', 'Prancer', 'Vixen',
'Comet', 'Cupid']);
*/
```

By breaking it down as documentation, you can, for example, hand this over to another developer without the need to explain the feature in much depth, and they'll develop something that has to match this piece of documentation. It specifies everything that is important to this feature – its default values and types, and where it inherits other features from.

We know that we need to specify some way of setting reindeer to pull the sled and also some toys to give, and so we can quickly specify extra methods for the sled:

```
/*
@name vehicle.Sled#reindeer
@function
@description Set the reindeer that will pull Santa's sled.
@param {string[]} reindeer A list of the reindeer.
@example
// specifying some reindeer
Sled().reindeer(['Dasher', 'Dancer', 'Rudolph', 'Vixen']);
*/
/*
@name vehicle.Sled#toys
@function
@description Add a list of toys and recipients to the Sled.
@param {Object[]} toys A list of toys and who will receive them.
@example
// Adding toys to the sled
Sled().toys([
{name:'Brian', toy:'Fire Engine'},
{name:'Drew', toy:'Roller-skates'},
{name:'Anna', toy:'Play-doh'},
...
]);
*/
```

Job done! You've got a specification to share with your team and something useful for your users in the form of full examples, and you didn't even have to open another text editor.

Use your documentation to share knowledge

Documentation isn't just for users. It's also used by internal developers to explain what they've written and how it works. This is especially valuable where the team is large or the code-base sprawling.

So, returning to our example, the next step would be to share with the rest of the team (or at least a selection of the team if yours is large) what the documentation looks like. This is useful for two main reasons:

- They can see if they understand what the documentation says the feature will do. It's best if they haven't seen the requirement before. If your fellow developers can't work out what 'MagicMethodX' is going to return from the docs, neither can your users.
- They can check that the feature accomplishes everything that they expect to, and that it's consistent with the rest of the functionality.

On previous projects, we've taken to referring to this stage of the development process as the 'bun fight'. It's a chance for everyone to have an honest say and throw a few pies without actually causing anyone to have to rewrite any code. If you can identify at this stage that a feature is over-complicated, lacking or just plain useless, you'll all be much happier to throw out a few lines of documentation than you may have been to throw out a partial, or even complete, piece of functionality.

Documentation has your back

The final benefit to working in this way is that your documentation not only remains accurate, it's always as accurate as your latest release. It can't fall behind. You can increase the likelihood that your docs will remain up to date by unit testing your examples.

Returning to the previous example, we can add a QUnit unit test to the expected output with ease during the build process – we know exactly how the code will look and, with the @example tag, we can identify easily where to find the bits that need testing. If it's tested it'll definitely work as you expect it to when a user copy and pastes it. You're ensuring quality from idea to implementation.

As an extra bauble, the best thing about a system like JSDocToolkit is that it'll take your inline comments and turn them into beautiful sites, as good systems will allow for customised output templates. You'll be producing full-featured sites for your projects and plugins with almost no extra effort, but all the benefits.

12

Cennydd Bowles

The Great Unveiling

Cennydd Bowles is a user experience designer and writer. He works for Clearleft, speaks at design events across the world, and wrote a book called Undercover User Experience Design. He blogs at www.cennydd.co.uk and tweets @cennydd.

The moment of unveiling our designs should be among our proudest, but it never seems to work out that way. Instead of a chance to show how we can bring our clients' visions to life, critique can be a tense, worrying ordeal. And yes, the stakes are high: a superb design is only superb if it goes live. Mismanage the feedback process and your research, creativity and hard work can be wasted, and your client may wonder whether you've been worth the investment. The great unveiling is a pivotal part of the design process, but it needn't be a negative one. Just as usability testing teaches us whether our designs meet user needs, presenting our work to clients tells us whether we've met important business goals. So how can we turn the tide to make presenting designs a constructive experience, and to give good designs a chance to shine through?

Timing is everything

First, consider when you should seek others' opinions. Your personal style will influence whether you show early sketches or wait to demonstrate something more complete. Some designers thrive at low fidelity, sketching out ideas that, despite their rudimentary nature, easily spark debate. Other designers take time to create more fully-realised versions. Some even argue that the great unveiling should be eliminated altogether by working directly alongside the client throughout, collaborating on the design to reach its full potential.

Whatever your individual preference, you'll rarely have the chance to do it entirely your own way. Contracts, clients, and deadlines will affect how early and often you share your work. However, try to avoid the trap of presenting too late and at too high fidelity. My experience has taught me that skilled designers tend to present their work earlier and allow longer for iteration than novices do. More aware of the potential flaws in their solutions, these designers cling less tightly to their initial efforts. Working roughly and seeking early feedback gives you the flexibility to respond more fully to nuances you may have missed until now.

Planning design reviews

Present design ideas face-to-face, or at least via video conference. Asynchronous methods like e-mail and Basecamp are slow, easily ignored, and deny you the opportunity to guide your colleagues through your work. In person, you profit from both the well-known benefits of non-verbal communication, and the chance to immediately respond to questions and elaborate on rationale.

Be sure to watch the numbers at your design review sessions, however. Any more than a handful of attendees and the meeting could quickly spiral into fruitless debate. Ask your project sponsor to appoint a representative to speak on behalf of each business function, rather than inviting too many cooks.

Where possible, show your work in its native format. Photocopy hand-drawn sketches to reinforce their disposability (the defining quality of a sketch) and encourage others to scribble their own thoughts on top. Show digital deliverables – wireframes, design concepts, rich interactions – on screen. The experience of a design is very different on screen than on paper. A monitor has appropriate dimensions and viewport size, presenting an accurate picture of the design's visual hierarchy, and putting interactive elements in the right context. On paper, a link is merely underlined text. On screen, it is another step along the user's journey.

Don't waste time presenting multiple concepts. Not only is it costly to work up multiple concepts to the level required for fair appraisal, but the practice demonstrates a sorry abdication of responsibility. Designers should be custodians of design. Asking for feedback on multiple designs turns the critique process into a beauty pageant, relinquishing a designer's authority. Instead of rational choices that meet genuine user and business needs, you may be stuck with a Frankensteinian monstrosity, assembled from incompatible parts: "This header plus the whizzy bit from Version C".

This isn't to say that you shouldn't explore lots of ideas yourself. Divergent thinking early in the design process is the only way to break free of the clichéd patterns and fads that so often litter mediocre sites. But you must act as a design curator, choosing the best of your work and explaining its rationale clearly and succinctly. Attitude, then, is central to successful critique. It can be difficult to tread the fine line between the harmful extremes of doormat passivity and prima donna arrogance. Remember that you are the professional, but be mindful that even experts make mistakes, particularly when – as with all design projects – they don't possess all the relevant information in advance. Present your case with open-minded confidence, while accepting that positive critique will make your design (and ultimately your skills) stronger.

The courage of your convictions

Ultimately, your success in the feedback process, and indeed in the entire design process, hinges upon the rationale you provide for your work. Ideally, you should be able to refer to your research – personas, usability test findings, analytics – to support your decisions. To keep this evidence in mind, print it out to share at the design review, or include it in your presentation. Explain the rationale behind the most important decisions before showing the design, so that you can be sure of the full attention of your audience.

Once you've covered these points, display your design and walk through the specific features of the page. A little honesty goes a long way here: state your case as strongly as your rationale demands. Sure of your reasoning? Be strong. Speculating an approach based on a hunch? Say so, and encourage your colleagues to explore the idea with you and see where it leads.

Of course, none of these approaches should be sacrosanct. A proficient designer must be able to bend his or her way of working to suit the situation at hand. So sometimes you'll want to ignore these rules of thumb and explore your own hunches as required. More power to you. As long as you think as clearly about the feedback process as you have about the design itself, you'll be able to enjoy the great unveiling as a moment to be savoured, not feared.

13

The Standardistas

Good Ideas Grow on Paper

In addition to their role as The Standardistas, Christopher Murphy and Nicklas Persson teach interactive design at the University of Ulster at Belfast, where they have been active in promoting a web standards-based curriculum.

As tweed-clad duo The Standardistas, they write regularly on standards-based web design and the importance of improving web design education. Their first book, which extols the virtues of A Web Standardistas' Approach, has received widespread praise for its practical and hands-on modus operandi.

Great designers have one thing in common: their design process is centred on ideas; ideas that are more often than not developed on paper. Though it's often tempting to take the path of least resistance, turning to the computer in the headlong rush to complete a project (often in the face of formidable client pressure), resist the urge and – for a truly great idea – start first on paper. The path of least resistance is often characterised by cliché and overused techniques – one per cent noise, border-radius, text-shadow – the usual suspects – techniques that are ten-a-penny at the gallery sites. Whilst all are useful, and technique and craft are important, great design isn't about technique alone – it's about technique in the service of good ideas.

But how do we generate those ideas?

Inspiration can certainly come to you out of the blue. When working as a designer in a role which often consists of incubating good ideas, however, idly waiting for the time-honoured lightbulb to appear above your head just isn't good enough. We need to establish an environment where we tip the odds of getting good ideas in our favour.

So, when faced with the blank canvas, what do we do to unlock the proverbial tidal wave of creativity? Fear not. We're about to share with you a couple of stalwart techniques that will stand you in good stead when you need that good idea, in the face of the pressure of yet another looming deadline.

Get the process right

Where do ideas come from? In many cases they come from anywhere but the screen. Hence, our first commandment is to close the lid of your computer and, for a change, work on paper. It might seem strange, it might also seem like a distraction, but – trust us – the time invested here will more than pay off.

Idea generation should be a process of rapid iteration, sketching and thinking aloud, all processes best undertaken in more fast paced, analogue media. Our tool of choice is the Sharpie and Flip Chart Combo©, intentionally low resolution to encourage lo-fi idea generation. In short, your tools should be designed not to be precious, but to quickly process your thoughts. Ideas can be expressed with a thick line marker or by drawing with a stick in the sand; it's the ideas that matter, not the medium.

input > synthesise > output

Ideas don't materialise in a vacuum. Without constant input, the outputs will inevitably remain the same. As such, it's essential to maintain an inquisitive mind, ensuring a steady flow of new triggers and stimuli that enable your thinking to evolve.

What every designer brings to the table is their prior experience and unique knowledge. It should come as no surprise to discover that a tried and tested method of increasing that knowledge is, believe it or not, to read – often and widely. The best and most nuanced ideas come after many years of priming the brain with an array of diverse material, a point made recently in Jessica Hische's aptly named Why You Should Know Your Shit.

One of the best ways of synthesising the knowledge you accumulate is to write. The act of writing facilitates your thinking and stores the pieces of the jigsaw you'll one day return to. You don't have to write a book or a well-articulated article; a scribbled note in the margin will suffice in facilitating the process of digestion.

As with writing, we implore you to make sketching an essential part of your digestion process. More immediate than writing, sketching has the power to put yet unformed ideas down on paper, giving you an insight into the fantastic conceptions you're more often than not still incubating.

Our second commandment is a practical one: always carry a sketchbook and a pen. Although it seems that the very best ideas are scribbled on the back of a beer mat or a wine-stained napkin, always carrying your 'thinking utensils' should be as natural as not leaving the house without your phone, wallet, keys or pants.

Further, the more you use your sketchbook, the less precious you'll find yourself becoming. Sketching isn't about being an excellent draughtsman, it's about synthesising and processing your thoughts and ideas, as Jason Santa Maria summarises nicely in his article Pretty Sketchy:

> *Sketchbooks are not about being a good artist, they're about being a good thinker.*
>
> Jason Santa Maria

The sketchbook and pen should become your trusted tools in your task to constantly survey the world around you. As Paul Smith says, You Can Find Inspiration in Anything close the lid, look beyond the computer; there's a whole world of inspiration out there.

Learn to love old dusty buildings

So, how do you learn? How do you push beyond the predictable world pre-filtered by Mr Google? The answer lies in establishing a habit of exploring the wonderful worlds of museums and libraries, dusty old buildings that repay repeated visits.

Once the primary repositories of thought and endless sources of inspiration, these institutions are now often passed over for the quick fix of a Google search or Wikipedia by you, the designer, chained to a desk and manacled to a MacBook. Whilst others might frown, we urge you to get away from your desk and take an eye-opening stroll through the knowledge-filled corridors of yore (and don't forget to bring your sketchbook).

Here you'll find ideas aplenty, ideas that will set you apart from your peers, who remain ever-reliant on the same old digital sources.

The idea generation toolbox

Now that we've established the importance of getting the process and the context right, it's time to meet the idea generation toolbox: a series of tools and techniques that can be applied singularly or in combination to solve the perennial problem of the blank canvas.

The clean sheet of paper, numbing in its emptiness, can prove an insurmountable barrier to many a project, but the route beyond it involves just a few, well-considered steps. The route to a good idea lies in widening your pool of inspiration at the project outset. Let go and generate ideas quickly; it's critical to diverge before you converge – but how do we do this and what exactly do we mean by this?

The temptation is to pull something out of your well-worn box of tricks, something that you know from experience will do the job. We urge you, however, not to fall prey to this desire. You can do better; better still, a few of you putting your minds together can do a lot better. By avoiding the path of least resistance, you can create something extraordinary.

Culturally, we value logical, linear thinking. Since the days of Plato and Aristotle, critical thinking, deduction and the pursuit of truth have been rewarded. To generate creative ideas, however, we need to start thinking sideways, making connections that don't necessarily follow logically. Lateral thinking, a phrase coined by Edward de Bono in 1967, aptly describes this very process:

> *With logic you start out with certain ingredients, just as in playing chess you start out with given pieces – lateral thinking is concerned not with playing with the existing pieces but with seeking to change those very pieces.*
>
> Edward de Bono

One of the easiest ways to start thinking laterally is to start with a mind map, a perfect tool for widening the scope of a project beyond the predictable and an ideal one for getting the context right for discovery.

Making connections

Mind maps can be used to generate, visualise and structure ideas. Arranged intuitively and classified around groupings, mind maps allow chance connections to be drawn across related groups of information, and are perfect for exposing alogical associations and unexpected relationships.

Get a number of people together in a room, equipped with the Sharpie and Flip Chart Combo©. Give yourself a limited amount of time – half an hour should prove more than enough – and you'll be surprised at the results a few well-chosen people can generate in a very short space of time. The key is to work fast, diverge and not inhibit thinking.

We've been embracing Tony Buzan's methods in our teaching for over a decade. His ideas on the power of radiant thinking and how this can be applied to mind maps, uncover the real power which lies in the human brain's ability to spot connections across a mapped out body of diverse knowledge.

Frank Chimero wrote about this recently in How to Have an Idea, which beautifully illustrates Mr Buzan's theories, articulating the importance of the brain's ability to make abstract connections, finding unexpected pairings when a concept is mapped out on paper.

Once a topic is surveyed and a rich set of stimuli articulated, the next stage is to draw connections, pulling from opposite sides of the mind map. It's at this point, when defining alogical connections, that the truly interesting and unexpected ideas are often uncovered.

The curve ball

If you've followed our instructions so far, all being well, you should have a number of ideas. Good news: we have one last technique to throw into the mix. We like to call it 'the curve ball', that last minute 'something' that forces you to rethink and encourages you to address a problem from a different direction.

There are a number of ways of throwing in a curve ball – a short, sharp, unexpected impetus – but we have a firm favourite we think you'll appreciate. Brian Eno and Peter Schmidt's Oblique Strategies – subtitled 'Over One Hundred Worthwhile Dilemmas' – are the perfect creative tool for throwing in a spot of unpredictability. As Eno and Schmidt put it:

> *The Oblique Strategies can be used as a pack (a set of possibilities being continuously reviewed in the mind) or by drawing a single card from the shuffled pack when a dilemma occurs in a working situation. In this case the card is trusted even if its appropriateness is quite unclear. They are not final, as new ideas will present themselves, and others will become self-evident.*
>
> Brian Eno and Peter Schmidt

Simply pick a card and apply the strategy to the problem at hand. The key here, as with de Bono's techniques, is to embrace randomness and provocation to inspire lateral creative approaches.

To assist this process, you might wish to consult one of the many virtual decks of Oblique Strategies online.

Wrapping up

To summarise, it's tempting to see the route to the fastest satisfactory conclusion in a computer when, in reality, that's the last place you should start. The tools we've introduced, far from time-consuming, are hyper-efficient, always at hand and, if you factor them into your workflow, the key to unlocking the ideas that set the great designers apart.

We wish you well on your quest in search of the perfect idea, now armed with the knowledge that the quest begins on paper.

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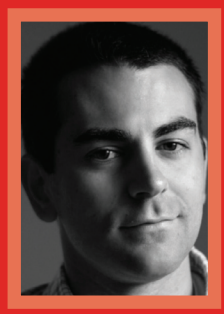
David DeSandro

An Introduction to CSS 3-D Transforms



If the Web were a coloring book, David DeSandro would be the kid manically scribbling outside the lines of every page, whittling away his front-end development crayons to wee nubs. Lucky for him, he's paid to do the thing he loves, creating engaging, innovative interfaces at nclud. Come nightfall, he dons a cape, develops resources, journals his discoveries, and fights crime around Washington DC.

Ladies and gentlemen, it is the second decade of the third millennium and we are still kicking around the same 2-D interface we got three decades ago. Sure, Apple debuted a few apps for OSX 10.7 that have a couple more 3-D flourishes, and Microsoft has had that Flip 3D for a while. But c'mon – 2011 is right around the corner. That's Twenty Eleven, folks. Where is our 3-D virtual reality? By now, we should be zipping around the Metaverse on super-sonic motorbikes. Granted, the capability of rendering complex 3-D environments has been present for years. On the web, there are already several solutions: Flash; three.js in <canvas>; and, eventually, WebGL. Finally, we meagre front-end developers have our own three-dimensional jewel: CSS 3-D transforms!

Rationale

Like a beautiful jewel, 3-D transforms can be dazzling, a true spectacle to behold. But before we start tacking 3-D diamonds and rubies to our compositions like Liberace's tailor, we owe it to our users to ask how they can benefit from this awesome feature.

An entire application should not take advantage of 3-D transforms. CSS was built to style documents, not generate explorable environments. I fail to find a benefit to completing a web form that can be accessed by swivelling my viewport to the Sign-Up Room (although there have been proposals to make the web just that). Nevertheless, there are plenty of opportunities to use 3-D transforms in between interactions with the interface, via transitions.

Take, for instance, the Weather App on the iPhone. The application uses two views: a details view; and an options view. Switching between these two views is done with a 3-D flip transition. This informs the user that the interface has two – and only two – views, as they can exist only on either side of the same plane. Also, consider slide shows. When you're looking at the last slide, what cues tip you off that advancing will restart the cycle at the first slide? A better paradigm might be achieved with a 3-D transform, placing the slides side-by-side in a circle (carousel) in three-dimensional space; in that arrangement, the last slide obviously comes before the first.

3-D transforms are more than just eye candy. We can also use them to solve dilemmas and make our applications more intuitive.

Current support

The CSS 3D Transforms module has been out in the wild for over a year now. Currently, only Safari supports the specification – which includes Safari on Mac OS X and Mobile Safari on iOS.

The support roadmap for other browsers varies. The Mozilla team has taken some initial steps towards implementing the module. Mike Taylor tells me that the Opera team is keeping a close eye on CSS transforms, and is waiting until the specification is fleshed out. And our best friend Internet Explorer still needs to catch up to 2-D transforms before we can talk about the 3-D variety.

To make matters more perplexing, Safari's WebKit cousin Chrome currently accepts 3-D transform declarations, but renders them in 2-D space. Chrome team member Paul Irish, says that 3-D transforms are on the horizon, perhaps in one of the next 8.0 releases.

This all adds up to a bit of a challenge for those of us excited by 3-D transforms. I'll give it to you straight: missing the dimension of depth can make degradation a bit ungraceful. Unless the transform is relatively simple and holds up in non-3D-supporting browsers, you'll most likely have to design another solution. But what's another hurdle in a steeplechase? We web folk have had our mettle tested for years. We're prepared to devise multiple solutions.

Here's the part of the article where I mention Modernizr, and you brush over it because you've read this part of an article hundreds of times before. But seriously, it's the best way to test for CSS 3-D transform support. Use it.

Even with these difficulties mounting up, trying out 3-D transforms today is the right move. The CSS 3-D transforms module was developed by the same team at Apple that produced the CSS 2D Transforms and Animation modules. Both specifications have since been adopted by Mozilla and Opera. Transforming in three-dimensions now will guarantee you'll be ahead of the game when the other browsers catch up.

The choice is yours. You can make excuses and pooh-pooh 3-D transforms because they're too hard and only snobby Apple fans will see them today. Or, with a tip of the fedora to Mr Andy Clarke, you can get hard-boiled and start designing with the best features out there right this instant.

So, I bid you, in the words of the eternal Optimus Prime...

Transform and roll out.

Let's get coding.

Perspective

To activate 3-D space, an element needs perspective. This can be applied in two ways: using the transform property, with the perspective as a functional notation:

```
-webkit-transform: perspective(600);
```

or using the perspective property:

```
-webkit-perspective: 600;
```

These two formats both trigger a 3-D space, but there is a difference. The first, functional notation is convenient for directly applying a 3-D transform on a single element (in the previous example, I use it in conjunction with a rotateY transform). But when used on multiple elements, the transformed elements don't line up as expected. If you use the same transform across elements with different positions, each element will have its own vanishing point. To remedy this, use the perspective property on a parent element, so each child shares the same 3-D space.

The value of perspective determines the intensity of the 3-D effect. Think of it as a distance from the viewer to the object. The greater the value, the further the distance, so the less intense the visual effect. perspective: 2000; yields a subtle 3-D effect, as if we were viewing an object from far away. perspective: 100; produces a tremendous 3-D effect, like a tiny insect viewing a massive object.

By default, the vanishing point for a 3-D space is positioned at its centre. You can change the position of the vanishing point with perspective-origin property.

```
-webkit-perspective-origin: 25% 75%;
```

3-D transform functions

As a web designer, you're probably well acquainted with working in two dimensions, X and Y, positioning items horizontally and vertically. With a 3-D space initialised with perspective, we can now transform elements in all three glorious spatial dimensions, including the third Z dimension, depth.

3-D transforms use the same transform property used for 2-D transforms. If you're familiar with 2-D transforms, you'll find the basic 3D transform functions fairly similar.

```
rotateX(angle)
rotateY(angle)
rotateZ(angle)
translateZ(tz)
scaleZ(sz)
```

Whereas translateX() positions an element along the horizontal X-axis, translateZ() positions it along the Z-axis, which runs front to back in 3-D space. Positive values position the element closer to the viewer, negative values further away.

The rotate functions rotate the element around the corresponding axis. This is somewhat counter-intuitive at first, as you might imagine that rotateX will spin an object left to right. Instead, using rotateX(45deg) rotates an element around the horizontal X-axis, so the top of the element angles back and away, and the bottom gets closer to the viewer.

There are also several shorthand transform functions that require values for all three dimensions:

```
translate3d(tx,ty,tz)
scale3d(sx,sy,sz)
rotate3d(rx,ry,rz,angle)
```

Pro-tip: These foo3d() transform functions also have the benefit of triggering hardware acceleration in Safari. Dean Jackson, CSS 3-D transform spec author and main WebKit dude, writes (to Thomas Fuchs):

> *In essence, any transform that has a 3D operation as one of its functions will trigger hardware compositing, even when the actual transform is 2D, or not doing anything at all (such as translate3d(0,0,0)). Note this is just current behaviour, and could change in the future (which is why we don't document or encourage it). But it is very helpful in some situations and can significantly improve redraw performance.*

For the sake of simplicity, my demos will use the basic transform functions, but if you're writing production-ready CSS for iOS or Safari-only, make sure to use the foo3d() functions to get the best rendering performance.

Card flip

We now have all the tools to start making 3-D objects. Let's get started with something simple: flipping a card.

Here's the basic markup we'll need:

```
<section class="container">
<div id="card">
<figure class="front">1</figure>
<figure class="back">2</figure>
</div>
</section>
```

The .container will house the 3-D space. The #card acts as a wrapper for the 3-D object. Each face of the card has a separate element: .front; and .back. Even for such a simple object, I recommend using this same pattern for any 3-D transform. Keeping the 3-D space element and the object element(s) separate establishes a pattern that is simple to understand and easier to style.

We're ready for some 3-D stylin'. First, apply the necessary perspective to the parent 3-D space, along with any size or positioning styles.

```
.container {
width: 200px;
height: 260px;
position: relative;
-webkit-perspective: 800; }
```

Now the #card element can be transformed in its parent's 3-D space. We're combining absolute and relative positioning so the 3-D object is removed from the flow of the document. We'll also add width: 100%; and height: 100%;. This ensures the object's transform-origin will occur in the centre of .container. More on transform-origin later.

Let's add a CSS3 transition so users can see the transform take effect.

```
#card {
width: 100%;
height: 100%;
position: absolute;
-webkit-transform-style: preserve-3d;
-webkit-transition: -webkit-transform 1s; }
```

The .container's perspective only applies to direct descendant children, in this case #card. In order for subsequent children to inherit a parent's perspective, and live in the same 3-D space, the parent can pass along its perspective with transform-style: preserve-3d. Without 3-D transform-style, the faces of the card would be flattened with its parents and the back face's rotation would be nullified.

To position the faces in 3-D space, we'll need to reset their positions in 2-D with position: absolute. In order to hide the reverse sides of the faces when they are faced away from the viewer, we use backface-visibility: hidden.

```
#card figure {
display: block;
position: absolute;
width: 100%;
height: 100%;
-webkit-backface-visibility: hidden; }
```

To flip the .back face, we add a basic 3-D transform of rotateY(180deg).

```
#card .front {background: red; }

#card .back {
background: blue;
-webkit-transform: rotateY(180deg); }
```

With the faces in place, the #card requires a corresponding style for when it is flipped.

```
#card.flipped { -webkit-transform: rotateY(180deg); }
```

Now we have a working 3-D object. To flip the card, we can toggle the flipped class. When .flipped, the #card will rotate 180 degrees, thus exposing the .back face.

Slide-flip

Take another look at the Weather App 3-D transition. You'll notice that it's not quite the same effect as our previous demo. If you follow the right edge of the card, you'll find that its corners stay within the container. Instead of pivoting from the horizontal centre, it pivots on that right edge. But the transition is not just a rotation – the edge moves horizontally from right to left. We can reproduce this transition just by modifying a couple of lines of CSS from our original card flip demo.

The pivot point for the rotation occurs at the right side of the card. By default, the transform-origin of an element is at its horizontal and vertical centre (50% 50% or center center). Let's change it to the right side:

```
#card { -webkit-transform-origin: right center; }
```

That flip now needs some horizontal movement with translateX. We'll set the rotation to -180deg so it flips right side out.

```
#card.flipped {
-webkit-transform: translateX(-100%) rotateY(-180deg); }
```

Cube

Creating 3-D card objects is a good way to get started with 3-D transforms. But once you've mastered them, you'll be hungry to push it further and create some true 3-D objects: prisms. We'll start out by making a cube.

The markup for the cube is similar to the card. This time, however, we need six child elements for all six faces of the cube:

```
<section class="container">
<div id="cube">
<figure class="front">1</figure>
<figure class="back">2</figure>
<figure class="right">3</figure>
<figure class="left">4</figure>
<figure class="top">5</figure>
<figure class="bottom">6</figure>
</div>
</section>
```

Basic position and size styles set the six faces on top of one another in the container.

```
.container {
width: 200px;
height: 200px;
position: relative;
-webkit-perspective: 1000; }

#cube {
width: 100%;
height: 100%;
position: absolute;
-webkit-transform-style: preserve-3d;}
```

```
#cube figure {
width: 196px;
height: 196px;
display: block;
position: absolute;
border: 2px solid black; }
```

With the card, we only had to rotate its back face. The cube, however, requires that five of the six faces to be rotated. Faces 1 and 2 will be the front and back. Faces 3 and 4 will be the sides. Faces 5 and 6 will be the top and bottom.

```
#cube .front { -webkit-transform: rotateY(0deg); }
#cube .back { -webkit-transform: rotateX(180deg); }
#cube .right { -webkit-transform: rotateY(90deg); }
#cube .left { -webkit-transform: rotateY(-90deg); }
#cube .top { -webkit-transform: rotateX(90deg); }
#cube .bottom { -webkit-transform: rotateX(-90deg); }
```

We could remove the first #cube .front style declaration, as this transform has no effect, but let's leave it in to keep our code consistent.

Now each face is rotated, and only the front face is visible. The four side faces are all perpendicular to the viewer, so they appear invisible. To push them out to their appropriate sides, they need to be translated out from the centre of their positions. Each side of the cube is 200 pixels wide. From the cube's centre they'll need to be translated out half that distance, 100px.

```
#cube .front { -webkit-transform: rotateY(0deg)
translateZ(100px); }
#cube .back { -webkit-transform: rotateX(180deg)
translateZ(100px); }
#cube .right { -webkit-transform: rotateY(90deg)
translateZ(100px); }
#cube .left { -webkit-transform: rotateY(-90deg)
translateZ(100px); }
#cube .top { -webkit-transform: rotateX(90deg)
translateZ(100px); }
#cube .bottom { -webkit-transform: rotateX(-90deg)
translateZ(100px); }
```

Note here that the translateZ function comes after the rotate. The order of transform functions is important. Take a moment and soak this up. Each face is first rotated towards its position, then translated outward in a separate vector.

We have a working cube, but we're not done yet.

Returning to the z-axis origin

For the sake of our users, our 3-D transforms should not distort the interface when the active panel is at its resting position. But once we start pushing elements off their Z-axis origin, distortion is inevitable.

In order to keep 3-D transforms snappy, Safari composites the element, then applies the transform. Consequently, anti-aliasing on text will remain whatever it was before the transform was applied. When transformed forward in 3-D space, significant pixelation can occur.

Looking back at the Perspective 3 demo, note that no matter how small the perspective value is, or wherever the transform-origin may be, the panel number 1 always returns to its original position, as if all those funky 3-D transforms didn't even matter.

To resolve the distortion and restore pixel perfection to our #cube, we can push the 3-D object back, so that the front face will be positioned back to the Z-axis origin.

```
#cube { -webkit-transform: translateZ(-100px); }
```

Rotating the cube

To expose any face of the cube, we'll need a style that rotates the cube to expose any face. The transform values are the opposite of those for the corresponding face. We toggle the necessary class on the #box to apply the appropriate transform.

```
#cube.show-front { -webkit-transform: translateZ(-100px)
rotateY(0deg); }
#cube.show-back { -webkit-transform: translateZ(-100px)
rotateX(-180deg); }
#cube.show-right { -webkit-transform: translateZ(-100px)
rotateY(-90deg); }
```

```
#cube.show-left { -webkit-transform: translateZ(-100px)
rotateY(90deg); }
#cube.show-top { -webkit-transform: translateZ(-100px)
rotateX(-90deg); }
#cube.show-bottom { -webkit-transform: translateZ(-100px)
rotateX(90deg); }
```

Notice how the order of the transform functions has reversed. First, we push the object back with translateZ, then we rotate it.

Finishing up, we can add a transition to animate the rotation between states.

```
#cube { -webkit-transition: -webkit-transform 1s; }
```

Rectangular prism

Cubes are easy enough to generate, as we only have to worry about one measurement. But how would we handle a non-regular rectangular prism? Let's try to make one that's 300 pixels wide, 200 pixels high, and 100 pixels deep.

The markup remains the same as the #cube, but we'll switch the cube id for #box. The container styles remain mostly the same:

```
.container {
width: 300px;
height: 200px;
position: relative;
-webkit-perspective: 1000; }

#box {
width: 100%;
height: 100%;
position: absolute;
-webkit-transform-style: preserve-3d; }
```

Now to position the faces. Each set of faces will need their own sizes. The smaller faces (left, right, top and bottom) need to be positioned in the centre of the container, where they can be easily rotated and then shifted outward. The thinner left and right faces get positioned left: 100px ((300 – 100) ÷ 2), The stouter top and bottom faces get positioned top: 50px ((200 – 100) ÷ 2).

```
#box figure {
display: block;
position: absolute;
border: 2px solid black; }

#box .front,
#box .back {
width: 296px;
height: 196px; }

#box .right,
#box .left {
width: 96px;
height: 196px;
left: 100px; }

#box .top,
#box .bottom {
width: 296px;
height: 96px;
top: 50px; }
```

The rotate values can all remain the same as the cube example, but for this rectangular prism, the translate values do differ. The front and back faces are each shifted out 50 pixels since the #box is 100 pixels deep. The translate value for the left and right faces is 150 pixels for their 300 pixels width. Top and bottom panels take 100 pixels for their 200 pixels height:

```
#box .front { -webkit-transform: rotateY(0deg)
translateZ(50px); }
#box .back { -webkit-transform: rotateX(180deg)
translateZ(50px); }
#box .right { -webkit-transform: rotateY(90deg)
translateZ(150px); }
#box .left { -webkit-transform: rotateY(-90deg)
translateZ(150px); }
#box .top { -webkit-transform: rotateX(90deg)
translateZ(100px); }
#box .bottom { -webkit-transform: rotateX(-90deg)
translateZ(100px); }
```

Just like the cube example, to expose a face, the #box needs to have a style to reverse that face's transform. Both the translateZ and rotate values are the opposites of the corresponding face.

```
#box.show-front { -webkit-transform: translateZ(-50px)
rotateY(0deg); }
#box.show-back { -webkit-transform: translateZ(-50px)
rotateX(-180deg); }
#box.show-right { -webkit-transform: translateZ(-150px)
rotateY(-90deg); }
#box.show-left { -webkit-transform: translateZ(-150px)
rotateY(90deg); }
#box.show-top { -webkit-transform: translateZ(-100px)
rotateX(-90deg); }
#box.show-bottom { -webkit-transform: translateZ(-100px)
rotateX(90deg); }
```

Carousel

Front-end developers have a myriad of choices when it comes to content carousels. Now that we have 3-D capabilities in our browsers, why not take a shot at creating an actual 3-D carousel?

The markup for this demo takes the same form as the box, cube and card. Let's make it interesting and have a carousel with nine panels.

```
<div class="container">
<div id="carousel">
<figure>1</figure>
<figure>2</figure>
<figure>3</figure>
<figure>4</figure>
<figure>5</figure>
<figure>6</figure>
<figure>7</figure>
<figure>8</figure>
<figure>9</figure>
</div>
</div>
```

Now, apply basic layout styles. Let's give each panel of the #carousel 20 pixel gaps between one another, done here with left: 10px; and top: 10px;. The effective width of each panel is 210 pixels.

```
.container {
width: 210px;
height: 140px;
position: relative;
-webkit-perspective: 1000; }

#carousel {
width: 100%;
height: 100%;
position: absolute;
-webkit-transform-style: preserve-3d; }

#carousel figure {
display: block;
position: absolute;
width: 186px;
height: 116px;
left: 10px;
top: 10px;
border: 2px solid black; }
```

Next up: rotating the faces. This #carousel has nine panels. If each panel gets an equal distribution on the carousel, each panel would be rotated forty degrees from its neighbour (360÷9).

```
#carousel figure:nth-child(1) { -webkit-transform:
rotateY(0deg); }
#carousel figure:nth-child(2) { -webkit-transform:
rotateY(40deg); }
#carousel figure:nth-child(3) { -webkit-transform:
rotateY(80deg); }
#carousel figure:nth-child(4) { -webkit-transform:
rotateY(120deg); }
#carousel figure:nth-child(5) { -webkit-transform:
rotateY(160deg); }
#carousel figure:nth-child(6) { -webkit-transform:
rotateY(200deg); }
#carousel figure:nth-child(7) { -webkit-transform:
rotateY(240deg); }
#carousel figure:nth-child(8) { -webkit-transform:
rotateY(280deg); }
#carousel figure:nth-child(9) { -webkit-transform:
rotateY(320deg); }
```

Now, the outward shift. Back when we were creating the cube and box, the translate value was simple to calculate, as it was equal to one half the width, height or depth of the object. With this carousel, there is no size we can automatically use as a reference. We'll have to calculate the distance of the shift by other means.

Drawing a diagram of the carousel, we can see that we know only two things: the width of each panel is 210 pixels; and the each panel is rotated forty degrees from the next. If we split one of these segments down its centre, we get a right-angled triangle, perfect for some trigonometry.

We can determine the length of r in this diagram with a basic tangent equation:

There you have it: the panels need to be translated 288 pixels in 3-D space.

```
#carousel figure:nth-child(1) { -webkit-transform:
rotateY(0deg) translateZ(288px); }
#carousel figure:nth-child(2) { -webkit-transform:
rotateY(40deg) translateZ(288px); }
#carousel figure:nth-child(3) { -webkit-transform:
rotateY(80deg) translateZ(288px); }
#carousel figure:nth-child(4) { -webkit-transform:
rotateY(120deg) translateZ(288px); }
#carousel figure:nth-child(5) { -webkit-transform:
rotateY(160deg) translateZ(288px); }
#carousel figure:nth-child(6) { -webkit-transform:
rotateY(200deg) translateZ(288px); }
#carousel figure:nth-child(7) { -webkit-transform:
rotateY(240deg) translateZ(288px); }
#carousel figure:nth-child(8) { -webkit-transform:
rotateY(280deg) translateZ(288px); }
#carousel figure:nth-child(9) { -webkit-transform:
rotateY(320deg) translateZ(288px); }
```

If we decide to change the width of the panel or the number of panels, we only need to plug in those two variables into our equation to get the appropriate translateZ value. In JavaScript terms, that equation would be:

```
var tz = Math.round( ( panelSize / 2 ) /
  Math.tan( ( ( Math.PI * 2 ) / numberOfPanels ) / 2 ) );
// or simplified to
var tz = Math.round( ( panelSize / 2 ) /
  Math.tan( Math.PI / numberOfPanels ) );
```

Just like our previous 3-D objects, to show any one panel we need only apply the reverse transform on the carousel. Here's the style to show the fifth panel:

```
-webkit-transform: translateZ(-288px) rotateY(-160deg);
```

1. By now, you probably have two thoughts:
2. Rewriting transform styles for each panel looks tedious.

Why bother doing high school maths? Aren't robots supposed to be doing all this work for us?

And you're absolutely right. The repetitive nature of 3-D objects lends itself to scripting. We can offload all the monotonous transform styles to our dynamic script, which, if done correctly, will be more flexible than the hard-coded version.

Conclusion

3-D transforms change the way we think about the blank canvas of web design. Better yet, they change the canvas itself, trading in the flat surface for voluminous depth.

My hope is that you took at least one peak at a demo and were intrigued. We web designers, who have rejoiced for border-radius, box-shadow and background gradients, now have an incredible tool at our disposal in 3-D transforms. They deserve just the same enthusiasm, research and experimentation we have seen on other CSS3 features. Now is the perfect time to take the plunge and start thinking about how to use three dimensions to elevate our craft. I'm breathless waiting for what's to come.

See you on the flip side.

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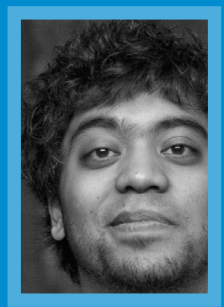
Dan Mall

Real Animation Using JavaScript, CSS3, and HTML5 Video



Dan Mall is an award-winning interactive art director and designer. He is an enthralled husband, Senior Designer at Big Spaceship, former Interactive Director at Happy Cog, technical editor for A List Apart, co-founder of Typedia, and singer/keyboard player for contemporary-Christian band Four24. Dan writes about design and other issues on Twitter and his industry-recognized site, danielmall.com.

When I was in school to be a 3-D animator, I read a book called Timing for Animation. Though only 152 pages long, it's essentially the bible for anyone looking to be a great animator. In fact, Pixar chief creative officer John Lasseter used the first edition as a reference when he was an animator at Walt Disney Studios in the early 1980s. In the book, authors John Halas and Harold Whitaker advise:

> *Timing is the part of animation which gives meaning to movement. Movement can easily be achieved by drawing the same thing in two different positions and inserting a number of other drawings between the two. The result on the screen will be movement; but it will not be animation.*

But that's exactly what we're doing with CSS3 and JavaScript: we're moving elements, not animating them. We're constantly specifying beginning and end states and allowing the technology to interpolate between the two. And yet, it's the nuances within those middle frames that create the sense of life we're looking for.

As bandwidth increases and browser rendering grows more consistent, we can create interactions in different ways than we've been able to before. We're encountering motion more and more on sites we'd generally label 'static.' However, this motion is mostly just movement, not animation. It's the manipulation of an element's properties, most commonly width, height, x- and y-coordinates, and opacity.

So how do we create real animation?

The metaphor

In my experience, animation is most believable when it simulates, exaggerates, or defies the real world. A bowling ball falls differently than a racquetball. They each have different weights and sizes, which affect the way they land, bounce, and impact other objects.

This is a major reason that JavaScript animation frequently feels mechanical; it doesn't complete a metaphor. Expanding and collapsing a feels very different than a opening a door or unfolding a piece of paper, but it often shouldn't. The interaction itself should tie directly to the art direction of a page.

Physics

Understanding the physics of a situation is key to creating convincing animation, even if your animation seeks to defy conventional physics. Isaac Newton's first law of motion states, "Every body remains in a state of rest or uniform motion (constant velocity) unless it is acted upon by an external unbalanced force." Once a force acts upon an object, the object's shape can change accordingly, depending on the strength of the force and the mass of the object. Another nugget of wisdom from Halas and Whitaker:

> *All objects in nature have their own weight, construction, and degree of flexibility, and therefore each behaves in its own individual way when a force acts upon it. This behavior, a combination of position and timing, is the basis of animation. The basic question which an animator is continually asking himself is this: "What will happen to this object when a force acts upon it?" And the success of his animation largely depends on how well he answers this question.*

In animating with CSS3 and JavaScript, keep physics in mind. How 'heavy' is the element you're interacting with? What kind of force created the action? A gentle nudge? A forceful shove? These subtleties will add a sense of realism to your animations and make them much more believable to your users.

Misdirection

Magicians often use misdirection to get their audience to focus on one thing rather than another. They fool us into thinking something happened that actually didn't.

Animation is the same, especially on a screen. By changing the arrangement of pixels on screen at a fast enough rate, your eyes fool your mind into thinking an object is actually in motion.

Another important component of misdirecting in animation is the use of multiple objects. Try to recall a cartoon where a character vanishes. More often, the character makes some sort of exaggerated motion (this is called anticipation) then disappears, and a puff a smoke follows. That smoke is an extra element, but it goes a long way into make you believe that character actually disappeared.

Very rarely does a vanishing character's opacity simply go from one hundred per cent to zero. That's not believable. So why do we do it with s?

Armed with the ammunition of metaphors and misdirection, let's code an example.

Shake, rattle, and roll

(These demos require at least a basic understanding of jQuery and CSS3. Run away if your're afraid, or brush up on CSS animation and resources for learning jQuery. Also, these demos use WebKit-specific features and are best viewed in the latest version of Safari, so performance in other browsers may vary.)

We often see the design pattern of clicking a link to reveal content. Our first demo shows us exactly that. It uses jQuery's slideDown() method, as many instances do.

But what force acted on the that caused it to open? Did pressing the button unlatch some imaginary hook? Did it activate an unlocking sequence with some gears?

Take 2

Our second demo is more explicit about what happens: the button fell on the and shook its content loose. Here's how it's done.

```
function clickHandler(){
$('#button').addClass('animate');
return false;
}
```

Clicking the link adds a class of animate to our button. That class has the following CSS associated with it:

```
<style>
.animate {
-webkit-animation-name: ANIMATE;
-webkit-animation-duration: 0.25s;
-webkit-animation-iteration-count: 1;
-webkit-animation-timing-function: ease-in;
}

@-webkit-keyframes ANIMATE {
from {
top: 72px;
}
to {
top: 112px;
}
}
</style>
```

In our keyframe definition, we've specified from and to states. This is great, because we can be explicit about how an object starts and finishes moving.

What's also extra handy is that these CSS keyframes broadcast events that you can react to with JavaScript. In this example, we're listening to the webkitAnimationEnd event and opening the only when the sequence is complete. Here's that code.

```
function attachAnimationEventHandlers(){
var wrap = document.getElementById('wrap');
wrap.addEventListener('webkitAnimationEnd', function($e) {
switch($e.animationName){
case "ANIMATE" :
openMain();
break;
default:
}
}, false);
}

function openMain(){
$('#main .inner').slideDown('slow');
}
</script>
```

(For more info on handling animation events, check out the documentation at the Safari Reference Library.)

Take 3

The problem with the previous demo is that the subtleties of timing aren't evident. It still feels a bit choppy.

For our third demo, we'll use percentages instead of keywords so that we can insert as many points as we need to communicate more realistic timing. The percentages allow us to add the keys to well-timed animation: anticipation, hold, release, and reaction.

```
<style>
@-webkit-keyframes ANIMATE {
0% {
top: 72px;
}
40% { /* anticipation */
top: 57px;
}
70% { /* hold */
top: 56px;
}
80% { /* release */
top: 112px;
}
100% { /* return */
top: 72px;
}
}
</style>
```

Take 4

The button animation is starting to feel much better, but the reaction of the opening seems a bit slow.

This fourth demo uses jQuery's delay() method to time the opening precisely when we want it. Since we know the button's animation is one second long and its reaction starts at eighty per cent of that, that puts our delay at 800ms

(eighty per cent of one second). However, here's a little pro tip: let's start the opening at 750ms instead. The extra fifty milliseconds makes it feel more like the opening is a reaction to the exact hit of the button. Instead of listening for the webkitAnimationEnd event, we can start the opening as soon as the button is clicked, and the movement plays on the specified delay.

```
function clickHandler(){
$('#button').addClass('animate');
openMain();
return false;
}

function openMain(){
$('#main .inner').delay(750).slideDown('slow');
}
</script>
```

Take 5

We can tweak the timing of that previous animation forever, but that's probably as close as we're going to get to realistic animation with CSS and JavaScript. However, for some extra sauce, we could relegate the whole animation in our final demo to a video sequence which includes more nuances and extra elements for misdirection.

Here's the basis of video replacement. Add a <video> element to the page and adjust its opacity to zero. Once the button is clicked, fade the button out and start playing the video. Once the video is finished playing, fade it out and bring the button back.

```
function clickHandler(){
if($('#main .inner').is(':hidden')){
$('#button').fadeTo(100, 0);
$('#clickVideo').fadeTo(100, 1, function(){
var clickVideo = document.getElementById('clickVideo');
clickVideo.play();
setTimeout(removeVideo, 2400);
openMain();
});
}
return false;
}

function removeVideo(){
$('#button').fadeTo(500, 1);
$('#clickVideo').fadeOut('slow');
}

function openMain(){
$('#main .inner').delay(1100).slideDown('slow');
}
```

Wrapping up

I'm no JavaScript expert by any stretch. I'm sure a lot of you scripting wizards out there could write much cleaner and more efficient code, but I hope this gives you an idea of the theory behind more realistic motion with the technology we're using most. This is just one model of creating more convincing animation, but you can create countless variations of this, including...

- Exporting <video> animations in 3-D animation tools or 2-D animation tools like Flash or After Effects
- Using <canvas> or SVG instead of <video>
- Employing specific JavaScript animation frameworks
- Making use of all the powerful properties of CSS Transforms and CSS Animation
- Trying out emerging CSS3 animation tools like Sencha Animator

If it wasn't already apparent, these demos show an exaggerated example and probably aren't practical in a lot of environments. However, there are a handful of great sites out there that honor animation techniques—metaphor, physics, and misdirection, among others—like Benjamin De Cock's vCard, 20 Things I Learned About Browsers and the Web by Fantasy Interactive, and the Nike Snowboarding site by Ian Coyle and HEGA. They're wonderful testaments to what you can do to aid interaction for users.

My goal was to show you the 'why' and the 'how.' Your charge is to discern the 'where' and the 'when.' Happy animating!

16

Simon Collison

The Articulate Web Designer of Tomorrow

Simon Collison is a designer, author and speaker with a decade of experience at the sharp end. He co-founded Erskine Design back in 2006, but left in early 2010 to pursue new and exciting challenges, including writing an ambitious new book, and organising the New Adventures in Web Design event. Simon has lived in London and Reykjavik, but now lives back in his hometown of Nottingham, where he is owned by a cat.

You could say that we design to communicate, and that we seek emotive responses. It sounds straightforward, and it can be, but leaving it to chance isn't wise. Many wander into web design without formal training, and whilst that certainly isn't essential, we owe it to ourselves to draw on wider influences, learn from the past, and think smarter. What knowledge can we ourselves explore in order to become better designers? In addition, how can we take this knowledge, investigate it through our unique discipline, and in turn speak more eloquently about what we do on the web? Below, I outline a number of things that I personally believe all designers should be using and exploring collectively.

Taking stock

Where we're at is good. Finding clarity through web standards, we've ended up quite modernist in our approach, pursuing function, elegance and reduction. However, we're not great at articulating our own design processes and principles to outsiders. Equally, we rely heavily on our instincts when deciding if something is or isn't good. That's fine, but we can better understand why things are the way they are by looking a little deeper, thereby helping us articulate what goes on in our design brains to our peers, our clients and to normal humans.

As designers we use ideas, concepts, text and images. We apply our ideas and experience, imposing order and structure to content, hoping to ease the communication of an idea to the largest possible audience or to a specific audience. We consciously manipulate most of what is available to us, but not all. There is something else we can use. I often think that brilliant work demands a keen understanding of the magical visual language that informs design.

Embracing an established visual language

This is a language whose alphabet is shapes, structures, colours, lines and rhythms. When effective, it is somewhat invisible, subliminally enforcing messages and evoking meaning, using methods solidly rooted in a grammar perceptible in virtually all extraordinary creative work. The syntax for art, architecture, film, and furniture, industrial and graphic design (think Bauhaus and the Swiss style perhaps), this language urges us to become fluent if we aim for a more powerful dialogue with our audience.

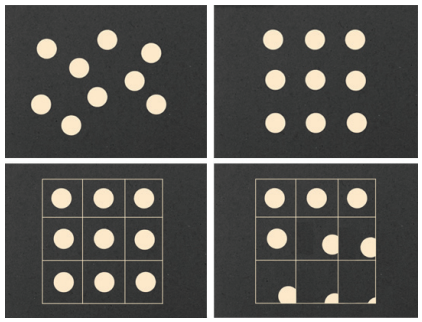


Figure 1: Structures (clockwise from top-left): Informal; Formal; Active; Visible.

The greatest creative minds our world has produced could understand some or all of this language. Line and point, form and shape. Abstract objects. Formal and informal structures. Visual distribution. Balance, composition and the multitudinous approaches to symmetry. Patterns and texture. Movement and paths. Repetition, rhythm and frequency. Colour theory. Whitespace and the pause. The list goes on.

The genius we perceive in our creative heroes is often a composite of experience, trial and error, conviction, intuition – even accident – but rarely does great work arise without an initial understanding of the nuts and bolts that help communicate an idea or emotion.

Our world of interactivity

As web designers, our connection with this language is most evident in graphic design. With more technological ease and power comes the responsibility to understand, wisely use, and be able to justify many of our decisions. We have moved beyond the scope of print into a world of interactivity, but we shouldn't let go of any established principles without good reason.

Figure 2: Understanding movement of objects in any direction along a defined path.

For example, immersion in this visual language can improve our implementation of CSS3 and JavaScript behaviour. With CSS3, we've seen a resurgence in CSS experimentation, some of which has been wonderful, but much of it has appeared clumsy. In the race to make something spin, twist, flip or fly from one corner to another, the designer sometimes fails to think about the true movement they seek to emulate. What forces are supposedly affecting this movement? What is the expected path of this transition and is it being respected?

Stopping to think about what is really supposed to be happening on the page compels us to use complex animations, diagrams and rotations more carefully. It helps us to better understand paths and movement.

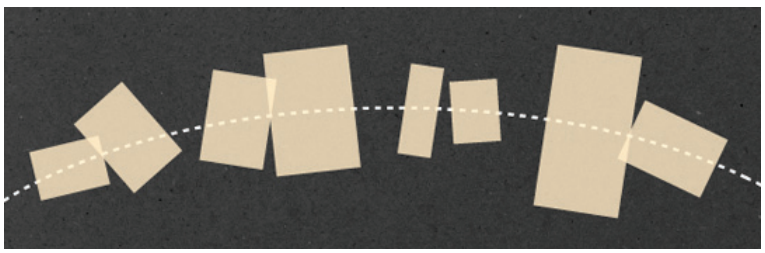


Figure 3: Repetition can occur through variations in colour, shape, direction, and so on.

It can only be of greater benefit to be mindful of symmetries, depth, affordance, juxtaposition, balance, economy and reduction. A deeper understanding of basic structures can help us to say more with sketches, wireframes, layouts and composition. We've all experimented with grids and rhythm but, to truly benefit from these long-established principles, we are duty-bound to understand their possibilities more than we will by simply leveraging a free framework or borrowing some CSS.

Design is not a science, but…

Threading through all of this is what we have learned from science, and what it teaches us of the human brain. This visual language matters because technology changes but, for the most part, people don't. For centuries, we humans have received and interpreted information in much the same way. Understanding more of how we perceive meaning can help designers make smarter decisions, and call on visual language to underpin these decisions. It is our responsibility as designers to be aware of mental models, mapping, semiotics, sensory experience and human emotion.

Design itself is not a science, but the appropriate use of visual language and scientific understanding exposes the line between effective and awkward, between communicative and mute. By strengthening our mental and analytical approach to what is often done arbitrarily or "because it feels right", we simply become better designers.

A visual language for the web

So, I've outlined numerous starting points and areas worthy of deeper investigation, and hopefully you're eager to do some research. However, I've mostly discussed established ideas and principles that we as web designers can learn from. It's my belief that our community has a shared responsibility to expand this visual language as it applies to the ebb and flow of the web. Indulge me as I conclude with a related tangent.

In defining a visual language specifically for the web, we must continue to mature. The old powerfully influences the new, but we must intelligently expand the visual language of masterful work and articulate what is uniquely ours.

For example, phrases like Ethan Marcotte's Responsive Web Design aren't merely elegant, they describe a new way of thinking and working, of communicating about designs and interaction patterns. These phrases broaden our vocabulary and are immediately adopted by designers worldwide, in both conversation and execution.

Our legacy

Our new definitions should flex and not be tied to specific devices or methods which fade away or morph with time. Our legacy is perhaps more about robust and flexible patterns and systems than it is about specific devices or programming languages.

The established principles we adopt and whatever new ways of thinking we define should slip neatly into a wider philosophy about our approach to web design. We're called, as a community, to define what is distinctive about the visual language of the web, create this vocabulary, this dialect that resonates with us and moves us forward as we tackle each day's work. Let's give it some thought.

Further reading

This is my immediate "go-to" list of books that I bullishly believe all web designers should own, but there is so much more out there to read. Sadly, many great texts relating to this stuff are often out of print. Feel free to share your recommendations.

Don Norman, *The Design of Everyday Things*
Christian Leborg, *Visual Grammar*
Scott McCloud, *Understanding Comics*
David Crow, *Visible Signs*
William Lidwell and Katrina Holden, *Universal Principles of Design*

17

Sarah Parmenter

Designing for iOS: Life Beyond Media Queries

Sarah Parmenter specialises in User Interface Design for iOS devices and the web, she regularly makes contributions to online web design related websites and written features to various magazines. Sarah also speaks at web design conferences around the world and is lucky to consult, and work for, many companies that we all know and love.

Although not a new phenomenon, media queries seem to be getting a lot attention online recently and for the right reasons too – it's great to be able to adapt a design with just a few lines of CSS – but many people are relying only on them to create an iPhone-specific version of their website. I was pleased to hear at FOWD NYC a few weeks ago that both myself and Aral Balkan share the same views on why media queries aren't always going to be the best solution for mobile. Both of us specialise in iPhone design ourselves and we opt for a different approach to media queries. The trouble is, regardless of what you have carefully selected to be display:none; in your CSS, the iPhone still loads everything in the background; all that large imagery for your full scale website also takes up valuable mobile bandwidth and time.

You can greatly increase the speed of your website by creating a specific site tailored to mobile users with just a few handy pointers – media queries, in some instances, might be perfectly suitable but, in others, here's what you can do.

Redirect your iPhone/iPod Touch users

To detect whether someone is viewing your site on an iPhone or iPod Touch, you can either use JavaScript or PHP.

The javascript

```
if((navigator.userAgent.match(/iPhone/i)) || (navigator.
userAgent.match(/iPod/i))) {
if (document.cookie.indexOf("iphone_redirect=false") == -1)
window.location = "http://mobile.yoursitehere.com"; }
```

The PHP

```
if(strstr($_SERVER['HTTP_USER_AGENT'],'iPhone') || strstr($_
SERVER['HTTP_USER_AGENT'],'iPod'))
{ header('Location: http://mobile.yoursitehere.com'); exit();}
```

Both of these methods redirect the user to a site that you have made specifically for the iPhone. At this point, be sure to provide a link to the full version of the website, in case the user wishes to view this and not be thrown into an experience they didn't want, with no way back.

Tailoring your site

So, now you've got 320×480 pixels of screen to play with – and to create a style sheet for, just as you would for any other site you build. There are a few other bits and pieces that you can add to your code to create a site that feels more like a fully immersive iPhone app rather than a website.

Retina display

When building your website specifically tailored to the iPhone, you might like to go one step further and create a specific style sheet for iPhone 4's Retina display. Because there are four times as many pixels on the iPhone 4 (640×960 pixels), you'll find specifics such as text shadows and borders will have to be increased.

```
<link rel="stylesheet"
media="only screen and (-webkit-min-device-pixel-ratio: 2)"
type="text/css" href="../iphone4.css" />
```

(Credit to Thomas Maier)

Prevent user scaling

This declaration, added into the <head>, stops the user being able to pinch-zoom in and out of your design, which is perfect if you are designing to the exact pixel measurements of the iPhone screen.

```
<meta name="viewport"
content="width=device-width; initial-scale=1.0; maximum-
scale=1.0;">
```

Designing for orientation

As iPhones aren't static devices, you'll also need to provide a style sheet for horizontal orientation. We can do this by inserting some JavaScript into the <head> as follows:

```
<script type="text/javascript">
function orient() {
switch(window.orientation) { case 0: document.
getElementById("orient_css").href = "css/iphone_portrait.css";
break;case -90: document.getElementById("orient_css").href
= "css/iphone_landscape.css"; break; case 90: document.
getElementById("orient_css").href = "css/iphone_landscape.
css"; break;}
} window.onload = orient();
</script>
```

You can also specify orientation styles using media queries. This is absolutely fine, as by this point you'll already be working with mobile-specific graphics and have little need to set a lot of things to display:none;

```
<link rel="stylesheet" media="only screen and (max-device-
width: 480px)" href="/iphone.css">
<link rel="stylesheet" media="only screen and (orientation:
portrait)" href="/portrait.css">
<link rel="stylesheet" media="only screen and (orientation:
landscape)" href="/landscape.css">
```

Remove the address and status bars, top and bottom

To give you more room on-screen and to make your site feel more like an immersive web app, you can place the following declaration into the <head> of your document's code to remove the address and status bars at the top and bottom of the screen.

```
<meta name="apple-mobile-web-app-capable" content="yes" />
```

Making the most of inbuilt functions

Similar to mailto: e-mail links, the iPhone also supports another two handy URI schemes which are great for enhancing contact details. When tapped, the following links will automatically bring up the appropriate call or text interface:

```
<a href="tel:01234567890">Call us</a>
<a href="sms:01234567890">Text us</a>
```

iPhone-specific web clip icon

Although I believe them to be fundamentally flawed, since they rely on the user bookmarking your site, iPhone Web Clip icons are still a nice touch. You need just two declarations, again in the <head> of your document:

```
<link rel="apple-touch-icon" href="icons/regular_icon.png" />
<link rel="apple-touch-icon" sizes="114x114" href="icons/
retina_icon.png" />
```

For iPhone 4 you'll need to create a 114×114 pixels icon; for a non-Retina display, a 57×57 pixels icon will do the trick.

Precomposed

Apple adds its standard gloss 'moon' over the top of any icon. If you feel this might be too much for your particular icon and would prefer a matte finish, you can add precomposed to the end of the apple-touch-icon declaration to remove the standard gloss.

```
<link rel="apple-touch-icon-precomposed" href="/images/touch-
icon.png" />
```

Wrapping up

Media queries definitely have their uses. They make it easy to build a custom experience for your visitor, regardless of their browser's size. For more complex sites, however, or where you have lots of imagery and other content that isn't necessary on the mobile version, you can now use these other methods to help you out. Remember, they are purely for presentation and not optimisation; for busy people on the go, optimisation and faster-running mobile experiences can only be a good thing.

Have a wonderful Christmas fellow Webbies!

18

Paul Hammond

Speed Up Your Site with Delayed Content

Paul Hammond makes things on the internet. He's currently working on Typekit, a cloud based font subscription service for web designers. Previously he managed a group of hard working supernerds at Flickr. He was involved in early versions of Yahoo Fire Eagle and Yahoo Pipes, and has helped build infrastructure for the BBC, Yahoo Bookmarks and Delicious.

Speed remains one of the most important factors influencing the success of any website, and the first rule of performance (according to Yahoo!) is reducing the number of HTTP requests. Over the last few years we've seen techniques like sprites and combo CSS/JavaScript files used to reduce the number of HTTP requests. But there's one area where large numbers of HTTP requests are still a fact of life: the small avatars attached to the comments on articles like this one.

Avatars

Many sites like 24 ways use a fantastic service called Gravatar to provide user images. As a user, you can sign up to Gravatar, give them your e-mail address, and upload an image to represent you. Sites can then include your image by generating a one way hash of your e-mail address and using that to build an image URL. For example, the markup for the comments on this page looks something like this:

```
<div>
<h4><a href="http://allinthehead.com/">
<img src="http://www.gravatar.com/avatar.php?gravatar_id=137
34b0cb20708f79e730809c29c3c48&amp;size=100" class="gravatar"
alt="" height="100" width="100" />
Drew McLellan
</a></h4>
<p>This is a great article!</p>
</div>
```

The Gravatar URL contains two parts. 100 is the size in pixels of the image we want. 13734b0cb20708f79e730809c29c3c48 is an MD5 digest of Drew's e-mail address. Using MD5 means we can request an image for a user without sharing their e-mail address with anyone who views the source of the page.

So what's wrong with avatars?

The problem is that a popular article can easily get hundreds of comments, and every one of them means another image has to be individually requested from Gravatar's servers. Each request is small and the Gravatar servers are fast but,

when you add them up, it can easily add seconds to the rendering time of a page. Worse, they can delay the loading of more important assets like the CSS required to render the main content of the page.

These images aren't critical to the page, and don't need to be loaded up front. Let's see if we can delay loading them until everything else is done. That way we can give the impression that our site has loaded quickly even if some requests are still happening in the background.

Delaying image loading

The first problem we find is that there's no way to prevent Internet Explorer, Chrome or Safari from loading an image without removing it from the HTML itself. Tricks like removing the images on the fly with JavaScript don't work, as the browser has usually started requesting the images before we get a chance to stop it.

Removing the images from the HTML means that people without JavaScript enabled in their browser won't see avatars. As Drew mentioned at the start of the month, this can affect a large number of people, and we can't completely ignore them. But most sites already have a textual name attached to each comment and the avatars are just a visual enhancement. In most cases it's OK if some of our users don't see them, especially if it speeds up the experience for the other 98%.

Removing the images from the source of our page also means we'll need to put them back at some point, so we need to keep a record of which images need to be requested. All Gravatar images have the same URL format; the only thing that changes is the e-mail hash. Storing this is a great use of HTML5 data attributes.

HTML5 data what?

Data attributes are a new feature in HTML5. The latest version of the spec says:

> *A custom data attribute is an attribute in no namespace whose name starts with the string "data-", has at least one character after the hyphen, is XML-compatible, and contains no characters in the range U+0041 to U+005A (LATIN CAPITAL LETTER A to LATIN CAPITAL LETTER Z).*
>
> *[...]*

> *Custom data attributes are intended to store custom data private to the page or application, for which there are no more appropriate attributes or elements. These attributes are not intended for use by software that is independent of the site that uses the attributes.*

In other words, they're attributes of an HTML element that start with "data-" which you can use to share data with scripts running on your site. They're great for adding small bits of metadata that don't fit into an existing markup pattern the way microformats do.

Let's see this in action

Take a look at the markup for comments again:

```
<div>
<h4><a href="http://allinthehead.com/">
<img src="http://www.gravatar.com/avatar.php?gravatar_id=137
34b0cb20708f79e730809c29c3c48&amp;size=100" class="gravatar"
alt="" height="100" width="100" />
Drew McLellan
</a></h4>
<p>This is a great article!</p>
</div>
```

Let's replace the <img> element with a data-gravatar-hash attribute on the <a> element:

```
<div>
<h4><a href="http://allinthehead.com/" data-gravatar-hash="137
34b0cb20708f79e730809c29c3c48">
Drew McLellan
</a></h4>
<p>This is a great article!</p>
</div>
```

Once we've done this, we'll need a small bit of JavaScript to find all these attributes, and replace them with images after the page has loaded. Here's an example using jQuery:

```
$(window).load(function() {
$('a[data-gravatar-hash]').prepend(function(index){
var hash = $(this).attr('data-gravatar-hash')
return '<img width="100" height="100" alt="" src="http://www.
gravatar.com/avatar.php?size=100&amp;gravatar_id=' + hash +
'">'
})
})
```

This code waits until everything on the page is loaded, then uses jQuery.prepend to insert an image into every link containing a data-gravatar-hash attribute. It's short and relatively simple, but in tests it reduced the rendering time of a sample page from over three seconds to well under one.

Finishing touches

We still need to consider the appearance of the page before the avatars have loaded. When our script adds extra content to the page it will cause a browser reflow, which is visually annoying. We can avoid this by using CSS to reserve some space for each image before it's inserted into the HTML:

```
#comments div {
padding-left: 110px;
min-height: 100px;
position: relative; }

#comments div h4 img {
display: block;
position: absolute;
top: 0;
left: 0; }
```

In a real world example, we'll also find that the HTML for a comment is more varied as many users don't provide a web page link. We can make small changes to our JavaScript and CSS to handle this case.

Put this all together and you get this example.

Taking this idea further

There's no reason to limit this technique to sites using Gravatar; we can use similar code to delay loading any images that don't need to be present immediately. For example, this year's redesigned Flickr photo page uses a "data-defer-src" attribute to describe any image that doesn't need to be loaded straight away, including avatars and map tiles.

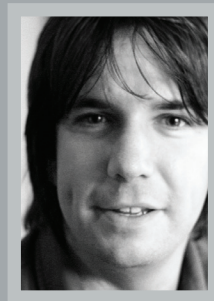
You also don't have to limit yourself to loading the extra resources once the page loads. You can get further bandwidth savings by waiting until the user takes an action before downloading extra assets. Amazon has taken this tactic to the extreme on its product pages – extra content is loaded as you scroll down the page.

So next time you're building a page, take a few minutes to think about which elements are peripheral and could be delayed to allow more important content to appear as quickly as possible.

19

Paul Annett

Sketching to Communicate



Paul Annett has over 10 years' interaction design experience, with the last five spent as a Senior Designer at award-winning UX agency, Clearleft. In June 2010 he left and has established his own little design studio, Supernice Studio Ltd. He and his wife, Relly Annett-Baker, live in the home counties with their two little boys and two cats.

As a web designer I've always felt that I'd somehow cheated the system, having been absent on the day God handed out the ability to draw. I didn't study fine art, I don't have a natural talent to effortlessly knock out a realistic bowl of fruit beside a water jug, and yet somehow I've still managed to blag my way this far. I'm sure many of you may feel the same.

I had no intention of becoming an artist, but to have enough skill to convey an idea in a drawing would be useful. Instead, my inadequate instrument would doodle drunkenly across the page leaving a web of unintelligible paths instead of the refined illustration I'd seen in my mind's eye. This – and the natural scrawl of my handwriting – is fine (if somewhat frustrating) when it's for my eyes only but, when sketching to communicate a concept to a client, such amateur art would be offered with a sense of embarrassment. So when I had the opportunity to take part in some sketching classes whilst at Clearleft I jumped at the chance.

Why sketch?

In UX workshops early on in a project's life, sketching is a useful and efficient way to convey and record ideas. It's disposable and inexpensive, but needn't look amateur. A picture may be worth a thousand words, but a well executed sketch of how you'll combine funny YouTube videos with elephants to make Lolephants.com could be worth millions in venture capital. Actually, that's not bad... ;-)

Although (as you will see) the basics of sketching are easy to master, the kudos you will receive from clients for being a 'proper designer' makes it worthwhile!

Where to begin?

Start by not buying yourself a sketch pad. If you were the type of child who ripped the first page out of a school exercise book and started again if you made even a tiny mistake (you're not alone!), Wreck This Journal may offer a helping hand. Practicing on plain A4 paper instead of any 'special' notepad will make the process a whole lot easier, no matter how deliciously edible those Moleskines look.

Do buy yourself a black fine-liner pen and a set of grey Pro Markers for shading. These pens are unlike any you will have used before, and look like blended watercolours once the ink is dry. Although multiple strokes won't create unsightly blotches of heavy ink on the page, they will go right through your top sheet so always remember to keep a rough sheet in the second position as an ink blotter.

Don't buy pencils to sketch with, as they lack the confidence afforded by the heavy black ink strokes of marker pens and fine-liners.

If you're going to be sketching with clients then invest in some black markers and larger sheets of paper. At the risk of sounding like a stationery brand whore, Sharpies are ideal, and these comedy-sized Post-Its do the job far better than cheaper, less sticky alternatives. Although they're thicker than most standard paper, be sure to double-layer them if you're writing on them on a wall, unless you fancy a weekend redecorating your client's swanky boardroom.

The best way to build confidence and improve your sketching technique is, obviously, to practise. Reading this article will be of no help unless you repeat the following examples several times each. Go grab a pen and some paper now, and notice how you improve within even a short period of time.

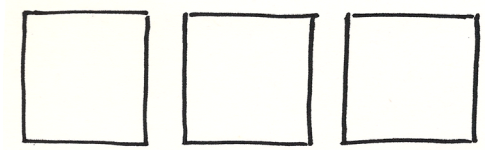
Sketching web UI

Most elements of any website can be drawn as a combination of geometric shapes.

Circles

To draw a circle, get in position and start by resting your hand on the page and making the circular motion a few times without putting pen to paper. As you lower your pen whilst continuing the motion, you should notice the resulting shape is more regular than it otherwise would have been.

Squares and rectangles



Draw one pair of parallel lines first, followed by the others to complete the shapes. Slightly overlap the ends of the lines to make corners feel more solid than if you were to leave gaps. If you're drawing a container, always draw the contents first, that way it won't be a squash to fit them in. If you're drawing a grid (of thumbnails, for instance), draw all parallel lines first as a series of long dashes to help keep line lengths and angles consistent.

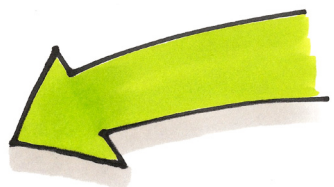
Shadows

To lift elements from the page for emphasis, add a subtle shadow with a grey marker. For the most convincing look, assume the light source to be at the top left of the page – the shadow should simply be a thick grey line along the bottom and up the right edge of your shape. If the shape is irregular, the shadow should follow its outline. This is a good way to emphasise featured items, speech bubbles, form buttons, and so on.

Sketching ideas

Arrows

Use arrows to show steps in a process or direction of movement. Giving shadows a 3-D feel, or adding a single colour, will help separate them from the rest of the sketch.



Faces

Start by drawing the circle. The direction of the nose (merely a point) indicates the direction of the person's gaze. The eyes and mouth show emotion: more open and curvy for happy thoughts; more closed and jagged for angry thoughts. Try out a few shapes and see what emotions they convey.

People

Remember, we're aiming for communication rather than realism here. A stick man would be fine. Give him a solid body, as shown in this example, and it becomes easier to pose him.

I know you think hands are hard, but they're quite important to convey some ideas, and for our purposes we don't need to draw hands with any detail. An oval with a stick does the job of a pointing hand. Close-ups might need more fingers showing, but still don't require any degree of realism.

Signage

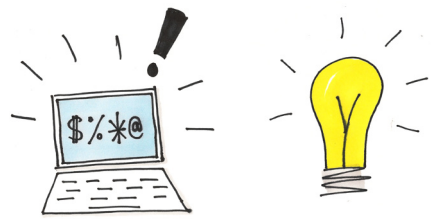
Don't be afraid to use words. We're sketching to communicate, so if the easiest way to show an office block is a building with a big 'office' sign on the roof, that's fine!

Labels

Likewise, feel free to label interactions. Use upper-case letters for legibility and slightly angle the horizontal bars upwards to create a more positive feel.

Clichés

Clichés are your friend! Someone's having an idea? Light bulb above the head. Computer's crashed? Cloud of smoke with "$£%*!"



It's good to practise regularly. Try applying these principles to still life, too. Look around you now and draw the cup on the table, or the books on the shelf. Think of it as a combination of shapes and aim for symbolism rather than realism, and it's not as hard as you'd think.

I hope this has given you the confidence to give it a shot, and the ability to at least not be mortified with the results!

Tip: If you're involving clients in design games like Leisa Reichelt's 'Design Consequences' it may be wise to tone down the quality of your drawings at that point so they don't feel intimidated. Remember, it's important for them to feel at ease with the idea of wireframing in front of you and their colleagues, no matter how bad their line work.

For more information see davegrayinfo.com – Dave Gray taught me everything I know :-)

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Meagan Fisher

Put Yourself in a Corner

Meagan Fisher is passionate about owls, coffee, and web design. In her ongoing mission to make the web a better place, she's partnered with some of the best designers in the industry, such as SimpleBits, Happy Cog, and Crush + Lovely. When she's not creating interfaces, she's speaking, tweeting, writing on Owltastic, or posting coffee art photography to Art in my Coffee.

For the first couple years of high school I was one of those jerks who made only the minimal required effort in school. Strangely enough, how badly I behaved in a class was always in direct proportion to how skilled I was in the subject matter. In the subjects where I was confident that I could pass without trying too hard, I would give myself added freedom to goof off in class.

Because I was a closeted lit-nerd, I was most skilled in English class. I'd devour and annotate required reading over the weekend, I knew my biblical and mythological allusions up and down, and I could give you a postmodern interpretation of a text like nobody's business. But in class, I'd sit in the back and gossip with my friends, nap, or scribble patterns in the margins of my textbooks. I was nonchalant during discussion, I pretended not to listen during lectures. I secretly knew my stuff, so I did well enough on tests, quizzes, and essays. But I acted like an ass, and wasn't getting the most I could out of my education.

The day of humiliation, but also epiphany

One day in Ms. Kaney's AP English Lit class, I was sitting in the back doodling. An earbud was dangling under my sweater hood, attached to the CD player (remember those?) sitting in my desk. Because of this auditory distraction, the first time Ms. Kaney called my name, I barely noticed. I definitely heard her the second time, when she didn't call my name so much as roar it. I can still remember her five feet frame stomping across the room and grabbing an empty desk. It screamed across the worn tile as she slammed it next to hers. She said, "This is where you sit now." My face gets hot just thinking about it.

I gathered my things, including the CD player (which was now impossible to conceal), and made my way up to the newly appointed Seat of Shame. There I sat, with my back to the class, eye-to-eye with Ms. Kaney. From my new vantage point I couldn't see my friends, or the clock, or the window. All I saw were Ms. Kaney's eyes, peering at me over her reading glasses while I worked. In addition to this punishment, I was told that from now on, not only would I participate in class discussions, but I would serve detention with her once a week until an undetermined point in the future.

During these detentions, Ms. Kaney would give me new books to read, outside the curriculum, and added on to my normal homework. They ranged from classics to modern novels, and she read over my notes on each book. We'd discuss them at length after class, and I grew to value not only our private discussions, but the ones in class as well. After a few weeks, there wasn't even a question of this being punishment. It was heaven, and I was more productive than ever.

To the point

Please excuse this sentimental story. It's not just about honoring a teacher who cared enough to change my life, it's really about sharing a lesson. The most valuable education Ms. Kaney gave me had nothing to do with literature. She taught me that I (and perhaps other people who share my special brand of crazy) need to be put in a corner to flourish. When we have physical and mental constraints applied, we accomplish our best work.

For those of you still reading, now seems like a good time to insert a pre-emptive word of mediation. Many of you, maybe all of you, are self-disciplined enough that you don't require the rigorous restrictions I use to maximize productivity. Also, I know many people who operate best in a stimulating and open environment. I would advise everyone to seek and execute techniques that work best for them. But, for those of you who share my inclination towards daydreams and digressions, perhaps you'll find something useful in the advice to follow.

In which I pretend to be Special Agent Olivia Dunham

Now that I'm an adult, and no longer have Ms. Kaney to reign me in, I have to find ways to put myself in the corner. By rejecting distraction and shaping an environment designed for intense focus, I'm able to achieve improved productivity.

Lately I've been obsessed with the TV show Fringe, a sci-fi series about an FBI agent and her team of genius scientists who save the world (no, YOU'RE a nerd). There's a scene in the show where the primary character has to delve into her subconscious to do extraordinary things, and she accomplishes this by immersing herself in a sensory deprivation tank. The premise is this: when enclosed in a space devoid of sound, smell, or light, she will enter a new plane of consciousness wherein she can tap into new levels of perception.

This might sound a little nuts, but to me this premise has some real-world application. When I am isolated from distraction, and limited to only the task at hand, I'm able to be productive on a whole new level. Since I can't actually work in an airtight iron enclosure devoid of input, I find practical ways to create an interruption-free environment.

Since I work from home, many of my methods for coping with distractions wouldn't be necessary for my office-bound counterpart. However for some of you 9-to-5-ers, the principles will still apply.

Consider your visual input

First, I have to limit my scope to the world I can (and need to) affect. In the largest sense, this means closing my curtains to the chaotic scene of traffic, birds, the post office, a convenience store, and generally lovely weather that waits outside my window. When the curtains are drawn and I'm no longer surrounded by this view, my sphere is reduced to my desk, my TV, and my cat. Sometimes this step alone is enough to allow me to focus.

But, my visual input can be whittled down further still. For example, the desk where I usually keep my laptop is littered with twelve owl figurines, a globe, four books, a three-pound weight, and various nerdy paraphernalia (hard drives, Wacom tablets, unnecessary bluetooth accessories, and so on). It's not so much a desk as a dumping ground for wacky flea market finds and impulse technology buys. Therefore, in addition to this Official Desk, I have an adult version of Ms. Kaney's Seat of Shame. It's a rusty old student's desk I picked up at the Salvation Army, almost an exact replica of the model Ms. Kaney dragged across the classroom all those years ago. This tiny reproduction Seat of Shame is literally in a corner, where my only view is a blank wall. When I truly need to focus, this is where I take refuge, with only a notebook and a pencil (and occasionally an iPad).

Find out what works for your ears

Even from my limited sample size of two people, I know there are lots of different ways to cope with auditory distraction. I prefer silence when focused on independent work, and usually employ some form of a white noise generator. I've yet to opt for the fancy 'real' white noise machines; instead, I use a desktop fan or our allergy filter machine. This is usually sufficient to block out the sounds of the dishwasher and the cat, which allows me to think only about the task of hand.

My boyfriend, the other half of my extensive survey, swears by another method. He calls it The Wall of Sound, and it's basically an intense blast of raucous music streamed directly into his head. The outcome of his technique is really the same as mine; he's blocking out unexpected auditory input. If you can handle the grating sounds of noisy music while working, I suggest you give The Wall of Sound a try.

Don't count the minutes

When I sat in the original Seat of Shame in lit class, I could no longer see the big classroom clock slowly ticking away the seconds until lunch. Without the marker of time, the class period often flew by. The same is true now when I work; the less aware of time I am, the less it feels like time is passing too quickly or slowly, and the more I can focus on the task (not how long it takes).

Nowadays, to assist in my effort to forget the passing of time, I sometimes put a sticky note over the clock on my monitor. If I'm writing, I'll use an app like WriteRoom, which blocks out everything but a simple text editor.

There are situations when it's not advisable to completely lose track of time. If I'm working on a project with an hourly rate and a tight scope, or if I need to be on time to a meeting or call, I don't want to lose myself in the expanse of the day. In these cases, I'll set an alarm that lets me know it's time to reign myself back in (or on some days, take a shower).

Put yourself in a mental corner, too

When Ms. Kaney took action and forced me to step up my game, she had the insight to not just change things physically, but to challenge me mentally as well. She assigned me reading material outside the normal coursework, then upped the pressure by requiring detailed reports of the material. While this additional stress was sometimes uncomfortable, it pushed me to work harder than I would have had there been less of a demand. Just as there can be freedom in the limitations of a distraction-free environment, I'd argue there is liberty in added mental constraints as well.

Deadlines as a constraint

Much has been written about the role of deadlines in the creative process, and they seem to serve different functions in different cases. I find that deadlines usually act as an important constraint and, without them, it would be nearly impossible for me to ever consider a project finished. There are usually limitless ways to improve upon the work I do and, if there's no imperative for me to be done at a certain point, I will revise ad infinitum. (Hence, the personal site redesign that will never end – Coming Soon, Forever!). But if I have a clear deadline in mind, there's a point when the obsessive tweaking has to stop. I reach a stage where I have to gather up the nerve to launch the thing.

Putting the pro in procrastination

Sometimes I've found that my tendency to procrastinate can help my productivity. (Ducks, as half the internet throws things at her.) I understand the reasons why procrastination can be harmful, and why it's usually a good idea to work diligently and evenly towards a goal. I try to divide my projects up in a practical way, and

sometimes I even pull it off. But for those tasks where you work aimlessly and no focus comes, or you find that every other to-do item is more appealing, sometimes you're forced to bring it together at the last moment. And sometimes, this environment of stress is a formula for magic. Often when I'm down to the wire and have no choice but to produce, my mind shifts towards a new level of clarity. There's no time to endlessly browse for inspiration, or experiment with convoluted solutions that lead nowhere.

Obviously a life lived perpetually on the edge of a deadline would be a rather stressful one, so it's not a state of being I'd advocate for everyone, all the time. But every now and then, the work done when I'm down to the wire is my best.

Keep one toe outside your comfort zone

When I'm choosing new projects to take on, I often seek out work that involves an element of challenge. Whether it's a design problem that will require some creative thinking, or a coding project that lends itself to using new technology like HTML5, I find a manageable level of difficulty to be an added bonus. The tension that comes from learning a new skill or rethinking an old standby is a useful constraint, as it keeps the work interesting, and ensures that I continue learning.

There you have it

Well, I think I've spilled most of my crazy secrets for forcing my easily distracted brain to focus. As with everything we web workers do, there are an infinite number of ways to encourage productivity. I hope you've found a few of these to be helpful, and please share your personal techniques in the comments. Have a happy and productive new year!

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Relly Annett-Baker

A Contentmas Epiphany

Relly Annett-Baker lives in the Home Counties with her husband, Paul Annett, and their two small sons. As a result, she thrives on the country air and can be guaranteed to stand on Lego at least once a day. Her principle employment is as live-in domestic staff for two cats but when not being purred into submission she is a content strategist and writer, runs dedicated workshops in-house with companies big and small and continues to procrastinate over the draft of her Five Simple Steps book 'Content Creation for the Web' due out in 2011. She'll get right back to it just after she's had another cup of tea and checked her RSS feed.

The twelve days of Christmas fall between 25 December, Christmas Day, and 6 January, the Epiphany of the Kings. Traditionally, these have been holidays and a lot of us still take a good proportion of these days off. Equally, a lot of us have a got a personal site kicking around somewhere that we sigh over and think, "One day I'll sort you out!" Why not take this downtime to give it a big ol' refresh? I know, good idea, huh?

HEY WAIT! WOAH! NO-ONE'S TOUCHING PHOTOSHOP OR DOING ANY CSS FANCYWORK UNTIL I'M DONE WITH YOU!

Be honest, did you immediately think of a sketch or mockup you have tucked away? Or some clever little piece of code you want to fiddle with? Now ask yourself, why would you start designing the container if you haven't worked out what you need to put inside?

Anyway, forget the content strategy lecture; I haven't given you your gifts yet. I present The Twelve Days of Contentmas!

This is a simple little plan to make sure that your personal site, blog or portfolio is not just looking good at the end of these twelve days, but is also a really useful repository of really useful content.

Warning klaxon: There are twelve parts, one for each day of Christmas, so this is a lengthy article. I'm not expecting anyone to absorb this in one go. Add to Instapaper. There is no TL;DR for this because it's a multipart process, m'kay? Even so, this plan of mine cuts corners on a proper applied strategy for content. You might find some aspects take longer than the arbitrary day I've assigned. And if you apply this to your company-wide intranet, I won't be held responsible for the mess.

That said, I encourage you to play along and sample some of the practical aspects of organising existing content and planning new content because it is, honestly, an inspiring and liberating process. For one thing, you get to review all the stuff you have put out for the world to look at and see what you could do next. This always leaves me full of ideas on how to plug the gaps I've found, so I hope you are similarly motivated come day twelve.

Let's get to it then, shall we?

On the first day of Contentmas, Relly gave to me:

1. A (partial) content inventory

I'm afraid being a site owner isn't without its chores. With great power comes great responsibility and all that. There are the domain renewing, hosting helpline calls and, of course, keeping on top of all the content that you have published. If you just frowned a little and thought, "Well, there's articles and images and… stuff", then I'd like to introduce you to the idea of a content inventory.

A content inventory is a list of all your content, in a simple spreadsheet, that allows you to see at a glance what is currently on your site: articles; about me page; contact form, and so on.

You add the full URL so that you can click directly to any page listed. You add a brief description of what it is and what tags it has. In fact, I'll show you. I've made a Google Docs template for you. Sorry, it isn't wrapped.

Does it seem like a mammoth task? Don't feel you have to do this all in one day. But do do it. For one thing, looking back at all the stuff you've pushed out into the world gives you a warm fuzzy feeling which keeps the heating bill down.

Grab a glass of mulled cider and try going month-by-month through your blog archives, or project-by-project through your portfolio. Do a little bit each day for the next twelve days and you'll have done something awesome. The best bit is that this exploration of your current content helps you with the next day's task.

Bonus gift: for more on content auditing and inventory, check out Jeff Veen's article on just this topic, which is also suitable for bigger business sites too.

On the second day of Contentmas, Relly gave to me:

2. Website loves

Remember when you were a kid, you'd write to Santa with a wish list that would make your parents squirm, because your biggest hope for your stocking would be either impossible or impossibly expensive. Do you ever get the same thing now as a grown-up where you think, "Wouldn't it be great if I could make a video blog every week", or "I could podcast once a month about this", and then you push it to the back of your mind, assuming that you won't have time or you wouldn't know what to talk about anyway?

True fact: content doesn't just have to be produced when we are so incensed that we absolutely must blog about a topic. Neither does it have to be a drain to a demanding schedule. You can plan for it. In fact, you're about to.

So, today, get a pen and a notebook. Move away from your computer. My gift to you is to grab a quiet ten minutes between turkey sandwiches and relatives visiting and give your site some of the attention it deserves for 2011.
What would you do with your site if you could? I don't mean what would you do purely visually – although by all means note those things down too – but to your site as a whole. Here are some jumping off points:

- Would you like to individually illustrate and design some of your articles?
- What about a monthly exploration of your favourite topic through video or audio?
- Who would you like to collaborate with?
- What do you want your site to be like for a user?
- What tone of voice would you like to use?
- How could you use imagery and typography to support your content?
- What would you like to create content about in the new year?

It's okay if you can't do these things yet. It's okay to scrub out anything where you think, "Nah, never gonna happen." But do give some thought to what you might want to do next. The best inspiration for this comes from what you've already done, so keep on with that inventory.

On the third day of Contentmas, Relly gave to me:

3. Red pens

Shock news, just in: the web is not print!

One of the hardest things as a writer is to reach the point where you say, "Yeah, okay, that's it. I'm done" and send off your beloved manuscript or article to print. I'm convinced that if deadlines didn't exist, nothing would get finished. Why? Well, at the point you hand it over to the publishing presses, you can make no more changes. At best, you can print an erratum or produce an updated second edition at a later date. And writers love to – no, they live to – tweak their creations, so handing them over is quite a struggle. Just one more comma and… Online, we have no such constraints. We can edit, correct, test, tweak, twiddle until we're blooming sick of it. Our red pens never run out of ink. It is time for you to run a more critical eye over your content, especially the stuff already published. Relish in the opportunity to change stuff on the fly. I am not so concerned by blog articles and such (although feel free to apply this concept to those, too), but mainly by your more concrete content: about pages; contact pages; home page navigation; portfolio pages; 404 pages.
Now, don't go running amok with the cut function yet. First, put all these evergreen pages into your inventory. In the notes section, write a quick analysis of how useful this copy is. Example questions:

- Is your contact page up-to-date?
- Does your about page link to the right places?
- Is your portfolio current?
- Does your 404 page give people a way to find what they were looking for?

We'll come back to this in a few days once we have a clearer idea of how to improve our content.

Bonus gift: the audio and slides of a talk I gave on microcopy and 404 pages at @media WebDirections last year.

On the fourth day of Contentmas, Relly gave to me:

4. Stalling nerds

Actually, I guess more accurately this is something I get given a lot. Designers and developers particularly can find a million ways to extract themselves from the content of a site but, as the site owner, and this being your personal playground and all, you mustn't. You actually can't, sorry.

But I do understand that at this point, 'sorting out your site' suddenly seems a lot less exciting, especially if you are a visually-minded person and words and lists aren't really your thing. So far, there has been a lot of not-very-exciting exercises in planning, and there's probably a nice pile of DVDs and video games that you got from Santa worth investigating.

Stay strong my friend. By now, you have probably hit upon an idea of some sort you are itching to start on, so for every half-hour you spend doing inventory, gift yourself another thirty minutes to play with that idea.

On the fifth day of Contentmas, Relly gave to me:

5. Golden rules

Here are some guidelines for writing online:

- Make headlines for tutorials and similar content useful and descriptive; use a subheading for any terrible pun you want to work in.
- Create a broad opening paragraph that addresses what your article is about. Part of the creative skill in writing is to do this in a way that both informs the reader and captures their attention. If you struggle with this, consider a boxout giving a summary of the article.
- Use headings to break up chunks of text and allow people to scan. Most people will have a scoot about an article before starting at the beginning to give it a proper read. These headings should be equal parts informative and enticing. Try them out as questions that might be posed by the reader too.
- Finish articles by asking your reader to take an affirmative action: subscribe to your RSS feed; leave a comment (if comments are your thing – more on that later); follow you on Twitter; link you to somewhere they have used your tutorial or code. The web is about getting excited, making things and sharing with others, so give your readers the chance to do that.
- For portfolio sites, this call to action is extra important as you want to pick up new business. Encourage people to e-mail you or call you – don't just rely on a number in the footer or an e-mail link at the top. Think up some consistent calls-to-action you can use and test them out.

So, my gift to you today is a simplified page table for planning out your content to make it as useful as possible.

Feel free to write a new article or tutorial, or work on that great idea from yesterday and try out these guidelines for yourself.

It's a simple framework – good headline; broad opening; headings to break up volume; strong call to action – but it will help you recognise if what you've written is in good shape to face the world. It doesn't tell you anything about how to create it – that's your endeavour – but it does give you a start. No more staring at a blank page.

On the sixth day of Contentmas, Relly gave to me:

6. Foundation-a-laying

Yesterday, we played with a page table for articles. Today, we are going to set the foundations for your new, spangly, spruced up, relaunched site (for when you're ready, of course). We've checked out what we've got, we've thought about what we'd like, we have a wish list for the future. Now is the time for a small reality check.

Be realistic with yourself. Can you really give your site some attention every day? Record a short snippet of audio once a week? A photo diary post once a month? Look back at the wish list you made.

- What can you do?
- What can you aim for?
- What just isn't possible right now?

As much as we'd all love to be producing a slick video podcast and screencast three times a week, it's better to set realistic expectations and work your way up.

Where does your site sit in your online world?

- Do you want it to be the hub of all your social interactions, a lifestream, a considered place of publication or a free for all?
- Do you want to have comments (do you have the personal resource to monitor comments?) or would you prefer conversation to happen via Twitter, Facebook or not at all?
- Does this apply to all pages, posts and content types or just some?

Get these things straight in your head and it's easier to know what sort of environment you want to create and what content you'll need to sustain it.

Get your notebook again and think about specific topics you'd like to cover, or aspects of a project you want to go into more, and how you can go ahead and do just that. A good motivator is to think what you'll get out of doing it, even if that is "And I'll finally show the poxy $whatever_community that my $chosen_format is better than their $other_format."

What topics have you really wanted to get off your chest? Look through your inventory again. What gaps are there in your content just begging to be filled?

Today, you're going to give everyone the gift of your opinion. Find one of those things where someone on the internet is wrong and create a short but snappy piece to set them straight. Doesn't that feel good? Soon you'll be able to do this in a timely manner every time someone is wrong on the internet!

On the seventh day of Contentmas, Relly gave to me:

7. Styles-a-guiding

Not colour style guides or brand style guides or code style guides. Content style guides. You could go completely to town and write yourself a full document defining every aspect of your site's voice and personality, plus declaring your view on contracted phrases and the Oxford comma, but this does seem a tad excessive. Unless you're writing an entire site as a fictional character, you probably know your own voice and vocabulary better than anyone. It's in your head, after all.

Instead, equip yourself with a good global style guide (I like the Chicago Manual of Style because I can access it fully online, but the Associated Press (AP) Stylebook has a nifty iPhone app and, if I'm entirely honest, I've found a copy of Eats, Shoots and Leaves has set me right on all but the most technical aspects of punctuation). Next, pick a good dictionary and bookmark thesaurus.com. Then have a go at Kristina Halvorson's 'Voice and Tone' exercise from her book Content Strategy for the Web, to nail down what you'd like your future content to be like:

> *To introduce the voice and tone qualities you're [looking to create], a good approach is to offer contrasting values. For example:*

- *Professional, not academic.*
- *Confident, not arrogant.*
- *Clever, not cutesy.*
- *Savvy, not hipster.*
- *Expert, not preachy.*

Take a look around some of your favourite sites and examine the writing and stylistic handling of content. What do you like? What do you want to emulate? What matches your values list?

Today's gift to you is an idea. Create a 'swipe file' through Evernote or Delicious and save all the stuff you come across that, regardless of topic, makes you think, "That's really cool." This isn't the same as an Instapaper list you'd like to read. This is stuff you have read or have seen that is worth looking at in closer detail.

- Why is it so good?
- What is the language and style like?
- What impact does the typography have?
- How does the imagery work to enhance the message?

This isn't about creating a personal brand or any such piffle. It's about learning to recognise how good content works and how to create something awesome yourself. Obviously, your ideas are brilliant, so take the time to understand how best to spring them on the unsuspecting public for easier world domination.

On the eighth day of Contentmas, Relly gave to me:

8. Times-a-making

You have an actual, real plan for what you'd like to do with your site and how it is going to sound (and probably some ideas on how it's going to look, too). I hope you are full of enthusiasm and Getting Excited To Make Things. Just before we get going and do exactly that, we are going to make sure we have made time for this creative outpouring.

Have you tried to blog once a week before and found yourself losing traction after a month or two? Are there a couple of podcasts lurking neglected in your archives? Whereas half of the act of running is showing up for training, half of creating is making time rather than waiting for it to become urgent. It's okay to write something and set a date to come back to it (which isn't the same as leaving it to decompose in your drafts folder).

Put ting a date in your calendar to do something for your site means that you have a forewarning to think of a topic to write about, and space in your schedule to actually do it. Crucially, you've actually made some time for this content lark.

To do this, you need to think about how long it takes to get something out of the door/shipped/published/whatever you want to call it. It might take you just thirty minutes to record a podcast, but also a further hour to research the topic beforehand and another hour to edit and upload the clips. Suddenly, doing a thirty minute podcast every day seems a bit unlikely. But, on the flipside, it is easy to see how you could schedule that in three chunks weekly.

Put it in your calendar. Do it, publish it, book yourself in for the next week. Keep turning up.

Today my gift to you is the gift of time. Set up your own small content calendar, using your favourite calendar system, and schedule time to play with new ways of creating content, time to get it finished and time to get it on your site. Don't let good stuff go to your drafts folder to die of neglect.

On the ninth day of Contentmas, Relly gave to me:

9. Copy enhancing

An incredibly radical idea for day number nine. We are going to look at that list of permanent pages you made back on day three and rewrite the words first, before even looking at a colour palette or picking a font! Crazy as it sounds, doing it this way round could influence your design. It could shape the imagery you use. It could affect your choice of typography. IMAGINE THE POSSIBILITIES!

Look at the page table from day five. Print out one for each of your homepage, about page, contact page, portfolio, archive, 404 page or whatever else you have. Use these as a place to brainstorm your ideas and what you'd like each page to do for your site. Doodle in the margin, choose words you think sound fun to say, daydream about pictures you'd like to use and colours you think would work, but absolutely, completely and utterly fill in those page tables to understand how much (or how little) content you're playing with and what you need to do to get to 'launch'.

Then, use them for guidance as you start to write. Don't skimp. Don't think that a fancy icon of an envelope encourages people to e-mail you. Use your words. People get antsy at this bit. Writing can be hard work and it's easy for me to say, "Go on and write it then!" I know this. I mean, you should see the faces I pull when I have to do anything related to coding. The closest equivalent would be when scientists have to stick their hands in big gloves attached to a glass box to do dangerous experiments.

Here's today's gift, a little something about writing that I hope brings you comfort:

> *To write something fantastic you almost always have to write a rubbish draft first.*

Now, you might get lucky and write a 'good enough' draft first time and that's fab – you've cut some time getting to 'fantastic'. If, however, you've always looked at your first attempt to write more than the bare minimum and sighed in despair, and resigned yourself to adding just a title, date and a screenshot, be cheered because you have taken the first step to being able to communicate with clarity, wit and panache.

Keep going. Look at writing you admire and emulate it. Think about how you will lovingly design those words when they are done. Know that you can go back and change them. Check back with your page table to keep you on track. Do that first draft.

On the tenth day of Contentmas, Relly gave to me:

10. Ideas for keeping

Hurrah! You have something down on paper, ready to start evolving your site around it. Here's where the words and visuals and interaction start to come together. Because you have a plan, you can think ahead and do things you wouldn't be able to pull together otherwise.

- How about finding a fresh-faced stellar illustrator on Dribbble to create you something perfect to pep up your contact page or visualize your witty statement on statements of work. A List Apart has been doing it for years and it hasn't worked out too badly for them, has it?
- What about spending this month creating a series of introductory tutorials on a topic, complete with screencasts and audio and give them a special home on your site?
- How about putting in some hours creating a glorious about me page, with a biography, nice picture, and where you spend your time online?
- You could even do the web equivalent of getting up in the attic and sorting out your site's search to make it easier to find things in your archives. Maybe even do some manual recommendations for relevant content and add them as calls to action.
- How about writing a few awesome case studies with individual screenshots of your favourite work, and creating a portfolio that plays to your strengths? Don't just rely on the pretty pictures; use your words. Otherwise no-one understands why things are the way they are on that screenshot and BAM! you'll be judged on someone else's tastes. (Elliot has a head start on you for this, so get to it!)
- Do you have a serious archive of content? What's it like being a first-time visitor to your site? Could you write them a guide to introduce yourself and some of the most popular stuff on your site? Ali Edwards is a massively popular crafter and every day she gets new visitors who have found her multiple papercraft projects on Flickr, Vimeo and elsewhere, so she created a welcome guide just for them.
- What about your microcopy? Can you improve on your blogging platform's defaults for search, comment submission and labels? I'll bet you can.
- Maybe you could plan a collaboration with other like-minded souls. A week of posts about the more advanced wonders of HTML5 video. A month-long baton-passing exercise in extolling the virtues of IE (shut up, it could happen!). Just spare me any more online advent calendars.
- Watch David McCandless's TED talk on his jawdropping infographic work and make something as awesome as the Billion Dollar O Gram. I dare you.

On the eleventh day of Contentmas, Relly gave to me:

11. Pixels pushing

Oh, go on then. Make a gorgeous bespoke velvet-lined container for all that lovely content. It's proper informed design now, not just decoration. Mr. Zeldman says so.

On the twelfth day of Contentmas, Relly gave to me:

12. Delighters delighting

The Epiphany is upon us; your site is now well on its way to being a beautiful, sustainable hub of content and you have a date in your calendar to help you keep that resolution of blogging more. What now?

- Keep on top of your inventory. One day it will save your butt, I promise.
- Keep making a little bit of time regularly to create something new: an article; an opinion piece; a small curation of related links; a photo diary; a new case study. That's easier than an annual content bootcamp for sure.
- And today's gift: look for ways to play with that content and make something a bit special. Stretch yourself a little. It'll be worth it.

All my favourite designers and developers have their own unique styles and touches. It's what sets them apart. My very, very favourites have an eloquence and expression that they bring to their sites and to their projects. I absolutely love to explore a well-crafted, well-written site – don't we all? I know the time it takes. I appreciate the time it takes. But the end results are delicious. Do please share your spangly, refreshed sites with me in the comments.

Catch me on Twitter, I'm @RellyAB, and I've been your host for these Twelve Days of Contentmas.

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Ethan Marcotte

Everything You Wanted To Know About Gradients (And a Few Things You Didn't)

Ethan Marcotte is a web designer and developer who cares about beautiful design, elegant code, and how the two intersect. He is currently working on a book about responsive web design, and drinking entirely too much coffee.

He swears profusely on Twitter, and would like to be an unstoppable robot ninja when he grows up. Beep.

Hello. I am here to discuss CSS3 gradients. Because, let's face it, what the web really needed was more gradients.

Still, despite their widespread use (or is it overuse?), the smartly applied gradient can be a valuable contributor to a designer's vocabulary. There's always been a tension between the inherently two-dimensional nature of our medium, and our desire for more intensity, more depth in our designs. And a gradient can evoke so much: the splay of light across your desk, the slow decrease in volume toward the end of your favorite song, the sunset after a long day. When properly applied, graded colors bring a much needed softness to our work.

Of course, that whole 'proper application' thing is the tricky bit.

But given their place in our toolkit and their prominence online, it really is heartening to see we can create gradients directly with CSS. They're part of the draft images module, and implemented in two of the major rendering engines.

Still, I've always found CSS gradients to be one of the more confusing aspects of CSS3. So if you'll indulge me, let's take a quick look at how to create CSS gradients—hopefully we can make them seem a bit more accessible, and bring a bit more art into the browser.

Gradient theory 101 (I hope that's not really a thing)

Right. So before we dive into the code, let's cover a few basics. Every gradient, no matter how complex, shares a few common characteristics. Here's a straightforward one:

At either end of our image, we have a final color value, or color stop: on the left, our stop is white; on the right, black. And more color-rich gradients are no different:

It's visually more intricate, sure. But at the heart of it, we have just seven color stops (red, orange, yellow, and so on), making for a fantastic gradient all the way.

Now, color stops alone do not a gradient make. Between each is a transition point, the fail-over point between the two stops. Now, the transition point doesn't need to fall exactly between stops: it can be brought closer to one stop or the other, influencing the overall shape of the gradient.

A tale of two syntaxes

Armed with our new vocabulary, let's look at a CSS gradient in the wild. Behold, the simple input button:

There's a simple linear gradient applied vertically across the button, moving from a bright sunflowerish hue (#FAA51A, for you hex nuts in the audience) to a much richer orange (#F47A20). And here's the CSS that makes it happen:

```
input[type=submit] {
background-color: #F47A20;
background-image: -moz-linear-gradient(
#FAA51A,
#F47A20
);
background-image: -webkit-gradient(linear, 0 0, 0 100%,
color-stop(0, #FAA51A),
color-stop(1, #F47A20)
);
}
```

I've borrowed David DeSandro's most excellent formatting suggestions for gradients to make this snippet a bit more legible but, still, the code above might have turned your stomach a bit. And that's perfectly understandable—heck, it sort of turned mine. But let's step through the CSS slowly, and see if we can't make it a little less terrifying.

Verbose webkit is verbose

Here's the syntax for our little gradient on WebKit:

```
background-image: -webkit-gradient(linear, 0 0, 0 100%,
color-stop(0, #FAA51A),
color-stop(1, #F47A20)
);
```

Woof. Quite a mouthful, no? Well, here's what we're looking at:

1. WebKit has a single -webkit-gradient property, which can be used to create either linear or radial gradients.
2. The next two values are the starting and ending positions for our gradient (0 0 and 0 100%, respectively). Linear gradients are simply drawn along the path between those two points, which allows us to change the direction of our gradient simply by altering its start and end points.
3. Afterward, we specify our color stops with the oh-so-aptly named color-stop parameter, which takes the stop's position on the gradient (0 being the beginning, and 100% or 1 being the end) and the color itself.

For a simple two-color gradient like this, -webkit-gradient has a bit of shorthand notation to offer us:

```
background-image: -webkit-gradient(linear, 0 0, 0 100%,
from(#FAA51A),
to(#FAA51A) );
```

from(#FAA51A) is equivalent to writing color-stop(0, #FAA51A), and to(#FAA51A) is the same as color-stop(1, #FAA51A) or color-stop(100%, #FAA51A)—in both cases, we're simply declaring the first and last color stops in our gradient.

Terse gecko is terse

WebKit proposed its syntax back in 2008, heavily inspired by the way gradients are drawn in the canvas specification. However, a different, leaner syntax came to the fore, eventually appearing in a draft module specification in CSS3.

Naturally, because nothing on the web was meant to be easy, this is the one that Mozilla has implemented.

Here's how we get gradient-y in Gecko:

```
background-image: -moz-linear-gradient(
#FAA51A,
#F47A20 );
```

Wait, what? Done already? That's right. By default, -moz-linear-gradient assumes you're trying to create a vertical gradient, starting from the top of your element and moving to the bottom. And, if that's the case, then you simply need to specify your color stops, delimited with a few commas.

I know: that was almost… painless. But the W3C/Mozilla syntax also affords us a fair amount of flexibility and control, by introducing features as we need them.

We can specify an origin point for our gradient:

```
background-image: -moz-linear-gradient(50% 100%,
#FAA51A,
#F47A20 );
```

As well as an angle, to give it a direction:

```
background-image: -moz-linear-gradient(50% 100%, 45deg,
#FAA51A,
#F47A20 );
```

And we can specify multiple stops, simply by adding to our comma-delimited list:

```
background-image: -moz-linear-gradient(50% 100%, 45deg,
#FAA51A,
#FCC,
#F47A20 );
```

By adding a percentage after a given color value, we can determine its position along the gradient path:

```
background-image: -moz-linear-gradient(50% 100%, 45deg,
#FAA51A,
#FCC 20%,
#F47A20 );
```

So that's some of the flexibility implicit in the W3C/Mozilla-style syntax.

Now, I should note that both syntaxes have their respective fans. I will say that the W3C/Mozilla-style syntax makes much more sense to me, and lines up with how I think about creating gradients. But I can totally understand why some might prefer WebKit's more verbose approach to the, well, looseness behind the -moz syntax. À chacun son gradient syntax.

Still, as the language gets refined by the W3C, I really hope some consensus is reached by the browser vendors. And with Opera signaling that it will support the W3C syntax, I suppose it falls on WebKit to do the same.

Reusing color stops for fun and profit

But CSS gradients aren't all simple colors and shapes and whatnot: by getting inventive with individual color stops, you can create some really complex, compelling effects.

Tim Van Damme, whose brain, I believe, should be posthumously donated to science, has a particularly clever application of gradients on The Box, a site dedicated to his occasional podcast series. Now, there are a fair number of gradients applied throughout the UI, but it's the feature image that really catches the eye.

You see, there's nothing that says you can't reuse color stops. And Tim's exploited that perfectly.

He's created a linear gradient, angled at forty-five degrees from the top left corner of the photo, starting with a fully transparent white (rgba(255, 255, 255, 0)). At the halfway mark, he's established another color stop at an only slightly more opaque white (rgba(255, 255, 255, 0.1)), making for that incredibly gradual brightening toward the middle of the photo.

But then he has set another color stop immediately on top of it, bringing it back down to rgba(255, 255, 255, 0) again. This creates that fantastically hard edge that diagonally bisects the photo, giving the image that subtle gloss.

And his final color stop ends at the same fully transparent white, completing the effect. Hot? I do believe so.

Rocking the radials

We've been looking at linear gradients pretty exclusively. But I'd be remiss if I didn't at least mention radial gradients as a viable option, including a modest one as a link accent on a navigation bar:

And here's the relevant CSS:

```
background: -moz-radial-gradient(50% 100%, farthest-side,
rgb(204, 255, 255) 1%,
rgb(85, 85, 85) 15%,
rgba(85, 85, 85, 0) );

background: -webkit-gradient(radial, 50% 100%, 0, 50% 100%,
15,
from(rgb(204, 255, 255)),
to(rgba(85, 85, 85, 0)) );
```

Now, the syntax builds on what we've already learned about linear gradients, so much of it might be familiar to you, picking out color stops and transition points, as well as the two syntaxes' reliance on either a separate property (-moz-radial-gradient) or parameter (-webkit-gradient(radial, ...)) to shift into circular mode.

Mozilla introduces another stand-alone property (-moz-radial-gradient), and accepts a starting point (50% 100%) from which the circle radiates. There's also a size constant defined (farthest-side), which determines the reach and shape of our gradient.

WebKit is again the more verbose of the two syntaxes, requiring both starting and ending points (50% 100% in both cases). Each also accepts a radius in pixels, allowing you to control the skew and breadth of the circle.

Again, this is a fairly modest little radial gradient. Time and article length (and, let's be honest, your author's completely inadequate grasp of geometry) prevent me from covering radial gradients in much more detail, because they are incredibly powerful. For those interested in learning more, I can't recommend the references at Mozilla and Apple strongly enough.

Leave no browser behind

But no matter the kind of gradients you're working with, there is a large swathe of browsers that simply don't support gradients. Thankfully, it's fairly easy to declare a sensible fallback—it just depends on the kind of fallback you'd like. Essentially, gradient-blind browsers will disregard any properties containing references to either -moz-linear-gradient, -moz-radial-gradient, or -webkit-gradient, so you simply need to keep your fallback isolated from those properties.

For example: if you'd like to fall back to a flat color, simply declare a separate background-color:

```
.nav {
background-color: #000;
background-image: -moz-linear-gradient(rgba(0, 0, 0, 0),
rgba(255, 255, 255, 0.45));
background-image: -webkit-gradient(linear, 0 0, 0 100%,
from(rgba(0, 0, 0, 0)), to(rgba(255, 255, 255, 0.45))); }
```

Or perhaps just create three separate background properties.

```
.nav {
background: #000;
background: #000 -moz-linear-gradient(rgba(0, 0, 0, 0),
rgba(255, 255, 255, 0.45));
background: #000 -webkit-gradient(linear, 0 0, 0 100%,
from(rgba(0, 0, 0, 0)), to(rgba(255, 255, 255, 0.45))); }
```

We can even build on this to fall back to a non-gradient image:

```
.nav {
background: #000 url("faux-gradient-lol.png") repeat-x;
background: #000 -moz-linear-gradient(rgba(0, 0, 0, 0),
rgba(255, 255, 255, 0.45));
background: #000 -webkit-gradient(linear, 0 0, 0 100%,
from(rgba(0, 0, 0, 0)), to(rgba(255, 255, 255, 0.45))); }
```

No matter the approach you feel most appropriate to your design, it's really just a matter of keeping your fallback design quarantined from its CSS3-ified siblings.

(If you're feeling especially masochistic, there's even a way to get simple linear gradients working in IE via Microsoft's proprietary filters. Of course, those come with considerable performance penalties that even Microsoft is quick to point out, so I'd recommend avoiding those.

And don't tell Andy Clarke I told you, or he'll probably unload his Derringer at me. Or something.)

Go forth and, um, gradientify!

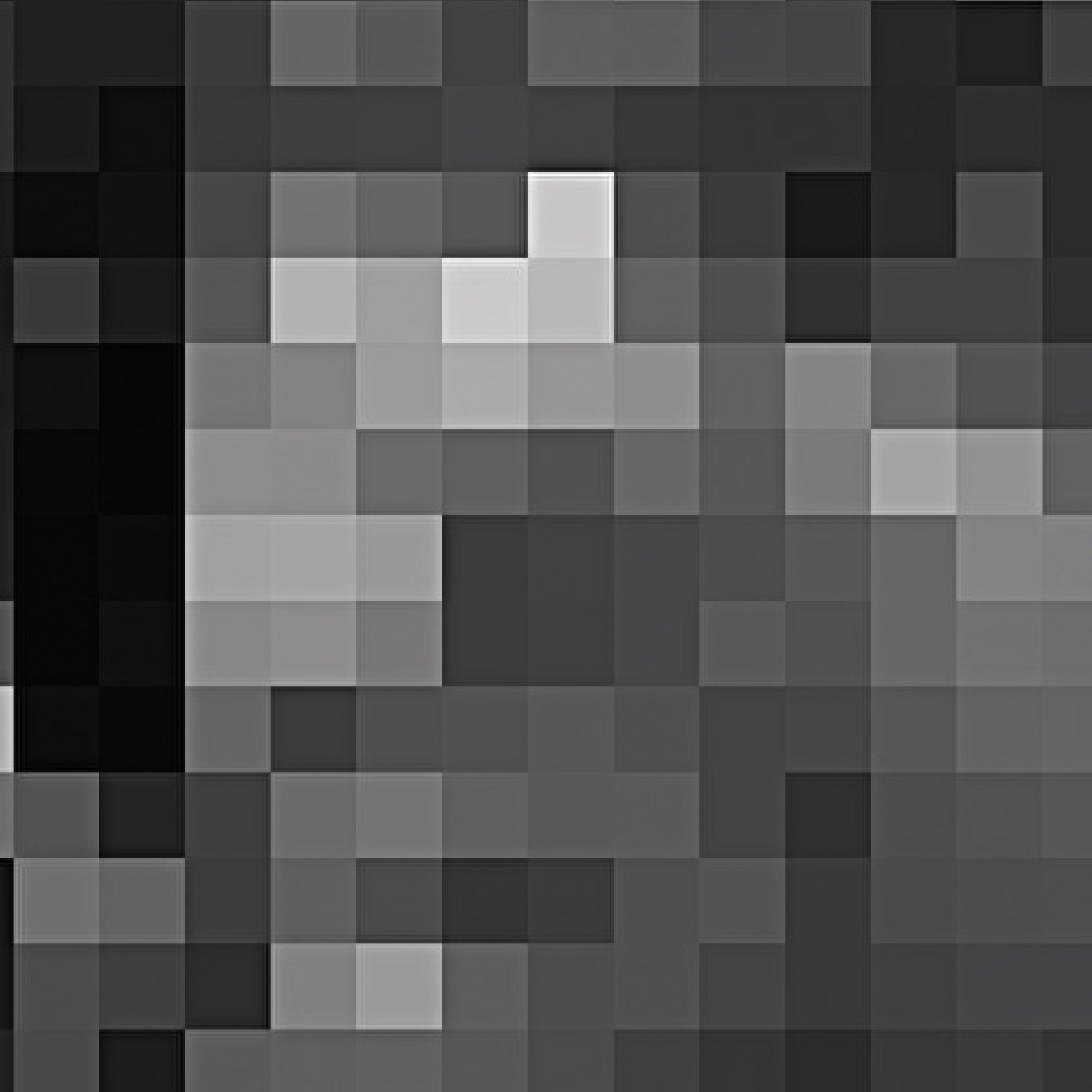
It's entirely possible your head's spinning. Heck, mine is, but that might be the effects of the 'nog. But maybe you're wondering why you should care about CSS gradients. After all, images are here right now, and work just fine.

Well, there are some quick benefits that spring to mind: fewer HTTP requests are needed; CSS3 gradients are easily made scalable, making them ideal for variable widths and heights; and finally, they're easily modifiable by tweaking a few CSS properties. Because, let's face it, less time spent yelling at Photoshop is a very, very good thing.

Of course, CSS-generated gradients are not without their drawbacks. The syntax can be confusing, and it's still under development at the W3C. As we've seen, browser support is still very much in flux. And it's possible that gradients themselves have some real performance drawbacks—so test thoroughly, and gradient carefully.

But still, as syntaxes converge, and support improves, I think generated gradients can make a compelling tool in our collective belts. The tasteful design is, of course, entirely up to you.

So have fun, and get gradientin'.



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Andy Clarke

Circles of Confusion

Andy Clarke's been called many things since he started designing for the web over ten years ago. His ego likes words like 'ambassador for CSS', 'industry prophet' and 'inspiring', but he's most proud that Jeffrey Zeldman once called him a 'bastard'. He runs Stuff and Nonsense, a small web design company that specialises in designing highly usable and attractive websites.

Andy's a renowned public speaker and presents at web design conferences worldwide. He teaches web design techniques and technologies through his own workshop masterclasses, For A Beautiful Web and is the author of the highly acclaimed Hardboiled Web Design. He writes a popular blog, And All That Malarkey, mostly about the web, and tweets as @malarkey.

Long before I worked on the web, I specialised in training photographers how to use large format, 5×4" and 10×8" view cameras – film cameras with swing and tilt movements, bellows and upside down, back to front images viewed on dim, ground glass screens. It's been fifteen years since I clicked a shutter on a view camera, but some things have stayed with me from those years.

In photography, even the best lenses don't focus light onto a point (infinitely small in size) but onto 'spots' or circles in the 'film/image plane'. These circles of light have dimensions, despite being microscopically small. They're known as 'circles of confusion'.

As circles of light become larger, the more unsharp parts of a photograph appear. On the flip side, when circles are smaller, an image looks sharper and more in focus. This is the basis for photographic depth of field and with that comes the knowledge that no photograph can be perfectly focused, never truly sharp. Instead, photographs can only be 'acceptably unsharp'.

Acceptable unsharpness is now a concept that's relevant to the work we make for the web, because often – unless we compromise – websites cannot look or be experienced exactly the same across browsers, devices or platforms. Accepting that fact, and learning to look upon these natural differences as creative opportunities instead of imperfections, can be tough. Deciding which aspects of a design must remain consistent and, therefore, possibly require more time, effort or compromises can be tougher. Circles of confusion can help us, our bosses and our customers make better, more informed decisions.

Acceptable unsharpness

Many clients still demand that every aspect of a design should be 'sharp' – that every user must see rounded boxes, gradients and shadows – without regard for the implications. I believe that this stems largely from the fact that they have previously been shown designs – and asked for sign-off – using static images.

It's also true that in the past, organisations have invested heavily in style guides which, while maybe still useful in offline media, have a strictness that often fails to allow for the flexibility that we need to create experiences that are appropriate to a user's browser or device capabilities.

We live in an era where web browsers and devices have wide-ranging capabilities, and websites can rarely look or be experienced exactly the same across them. Is a particular typeface vital to a user's experience of a brand? How

important are gradients or shadows? Are rounded corners really that necessary? These decisions determine how 'sharp' an element should be across browsers with different capabilities and, therefore, how much time, effort or extra code and images we devote to achieving consistency between them. To help our clients make those decisions, we can use circles of confusion.

Circles of confusion

Using cwircles of confusion involves plotting aspects of a visual design into a series of concentric circles, starting at the centre with elements that demand the most consistency. Then, work outwards, placing elements in order of their priority so that they become progressively 'softer', more defocused as they're plotted into outer rings.

If layout and typography must remain consistent, place them in the centre circle as they're aspects of a design that must remain 'sharp'.

When gradients are important – but not vital – to a user's experience of a brand, plot them close to, but not in the centre. This makes everyone aware that to achieve consistency, you'll need to carve out extra images for browsers that don't support CSS gradients.

If achieving rounded corners or shadows in all browsers isn't important, place them into outer circles, allowing you to save time by not creating images or employing JavaScript workarounds.

I've found plotting aspects of a visual design into circles of confusion is a useful technique when explaining the natural differences between browsers to clients. It sets more realistic expectations and creates an environment for more meaningful discussions about progressive and emerging technologies. Best of all, it enables everyone to make better and more informed decisions about design implementation priorities.

Involving clients allows the implications of the decisions they make more transparent. For me, this has sometimes meant shifting deadlines or it has allowed me to more easily justify an increase in fees. Most important of all, circles of confusion have helped the people that I work with move beyond yesterday's one-size-fits-all thinking about visual design, towards accepting the rich diversity of today's web.

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Brian Suda

Calculating Color Contrast

Brian Suda is a master informatician working to make the web a better place little by little everyday. Since discovering the Internet in the mid-90s, Brian Suda has spent a good portion of each day connected to it. His own little patch of Internet is http://suda.co.uk, where many of his past projects and crazy ideas can be found.

Some websites and services allow you to customize your profile by uploading pictures, changing the background color or other aspects of the design. As a customer, this personalization turns a web app into your little nest where you store your data. As a designer, letting your customers have free rein over the layout and design is a scary prospect. So what happens to all the stock text and images that are designed to work on nice white backgrounds? Even the Mac only lets you choose between two colors for the OS, blue or graphite! Opening up the ability to customize your site's color scheme can be a recipe for disaster unless you are flexible and understand how to find maximum color contrasts.

In this article I will walk you through two simple equations to determine if you should be using white or black text depending on the color of the background. The equations are both easy to implement and produce similar results. It isn't a matter of which is better, but more the fact that you are using one at all! That way, even with the craziest of Geocities color schemes that your customers choose, at least your text will still be readable.

Let's have a look at a range of various possible colors. Maybe these are pre-made color schemes, corporate colors, or plucked from an image.

#EF4444	#FAA31B	#FFF000	#82C341
#009F75	#88C6ED	#394BA0	#D54799

Now that we have these potential background colors and their hex values, we need to find out whether the corresponding text should be in white or black, based on which has a higher contrast, therefore affording the best readability. This can be done at runtime with JavaScript or in the back-end before the HTML is served up.

There are two functions I want to compare. The first, I call '50%'. It takes the hex value and compares it to the value halfway between pure black and pure white. If the hex value is less than half, meaning it is on the darker side of the spectrum, it returns white as the text color. If the result is greater than half, it's on the lighter side of the spectrum and returns black as the text value.

In PHP:

```
function getContrast50($hexcolor){
return (hexdec($hexcolor) > 0xffffff/2) ? 'black':'white'; }
```

In JavaScript:

```
function getContrast50(hexcolor){
return (parseInt(hexcolor, 16) > 0xffffff/2) ?
'black':'white'; }
```

It doesn't get much simpler than that! The function converts the six-character hex color into an integer and compares that to one half the integer value of pure white. The function is easy to remember, but is naive when it comes to understanding how we perceive parts of the spectrum. Different wavelengths have greater or lesser impact on the contrast.

The second equation is called 'YIQ' because it converts the RGB color space into YIQ, which takes into account the different impacts of its constituent parts. Again, the equation returns white or black and it's also very easy to implement.

In PHP:

```
function getContrastYIQ($hexcolor){
$r = hexdec(substr($hexcolor,0,2));
$g = hexdec(substr($hexcolor,2,2));
$b = hexdec(substr($hexcolor,4,2));
$yiq = (($r*299)+($g*587)+($b*114))/1000;
return ($yiq >= 128) ? 'black' : 'white'; }
```

In JavaScript:

```
function getContrastYIQ(hexcolor){
var r = parseInt(hexcolor.substr(0,2),16);
var g = parseInt(hexcolor.substr(2,2),16);
var b = parseInt(hexcolor.substr(4,2),16);
var yiq = ((r*299)+(g*587)+(b*114))/1000;
return (yiq >= 128) ? 'black' : 'white'; }
```

You'll notice first that we have broken down the hex value into separate RGB values. This is important because each of these channels is scaled in accordance to its visual impact. Once everything is scaled and normalized, it will be in a range between zero and 255. Much like the previous '50%' function, we now need to check if the input is above or below halfway. Depending on where that value is, we'll return the corresponding highest contrasting color.

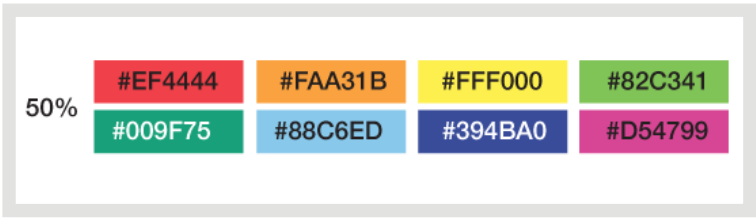
That's it: two simple contrast equations which work really well to determine the best readability.

If you are interested in learning more, the W3C has a few documents about color contrast and how to determine if there is enough contrast between any two colors. This is important for accessibility to make sure there is enough contrast between your text and link colors and the background.

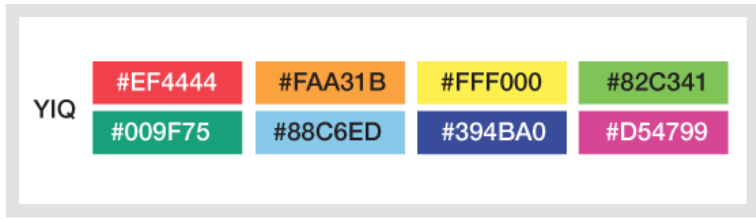
There is also a great article by Kevin Hale on Particletree about his experience with choosing light or dark themes. To round it out, Jonathan Snook created a color contrast picker which allows you to play with RGB sliders to get values for YIQ, contrast and others. That way you can quickly fiddle with the knobs to find the right balance.

Comparing results

Let's revisit our color schemes and see which text color is recommended for maximum contrast based on these two equations.



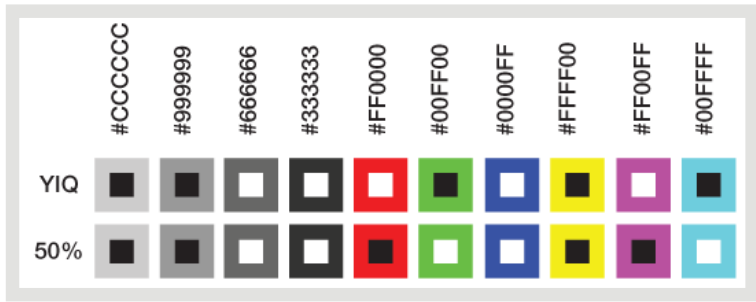
If we use the simple '50%' contrast function, we can see that it recommends black against all the colors except the dark green and purple on the second row. In general, the equation feels the colors are light and that black is a better choice for the text.



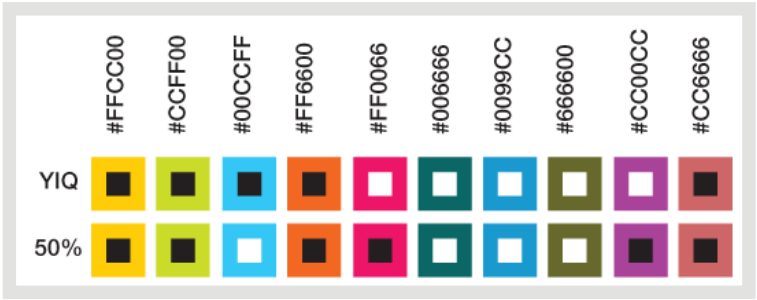
The more complex 'YIQ' function, with its weighted colors, has slightly different suggestions. White text is still recommended for the very dark colors, but there are some surprises. The red and pink values show white text rather than black. This equation takes into account the weight of the red value and determines that the hue is dark enough for white text to show the most contrast.

As you can see, the two contrast algorithms agree most of the time. There are some instances where they conflict, but overall you can use the equation that you prefer. I don't think it is a major issue if some edge-case colors get one contrast over another, they are still very readable.

Now let's look at some common colors and then see how the two functions compare. You can quickly see that they do pretty well across the whole spectrum.



In the first few shades of grey, the white and black contrasts make sense, but as we test other colors in the spectrum, we do get some unexpected deviation. Pure red #FFoooo has a flip-flop. This is due to how the 'YIQ' function weights the RGB parts. While you might have a personal preference for one style over another, both are justifiable.



In this second round of colors, we go deeper into the spectrum, off the beaten track. Again, most of the time the contrasting algorithms are in sync, but every once in a while they disagree. You can select which you prefer, neither of which is unreadable.

Conclusion

Contrast in color is important, especially if you cede all control and take a hands-off approach to the design. It is important to select smart defaults by making the contrast between colors as high as possible. This makes it easier for your customers to read, increases accessibility and is generally just easier on the eyes.

Sure, there are plenty of other equations out there to determine contrast; what is most important is that you pick one and implement it into your system.

So, go ahead and experiment with color in your design. You now know how easy it is to guarantee that your text will be the most readable in any circumstance.

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