

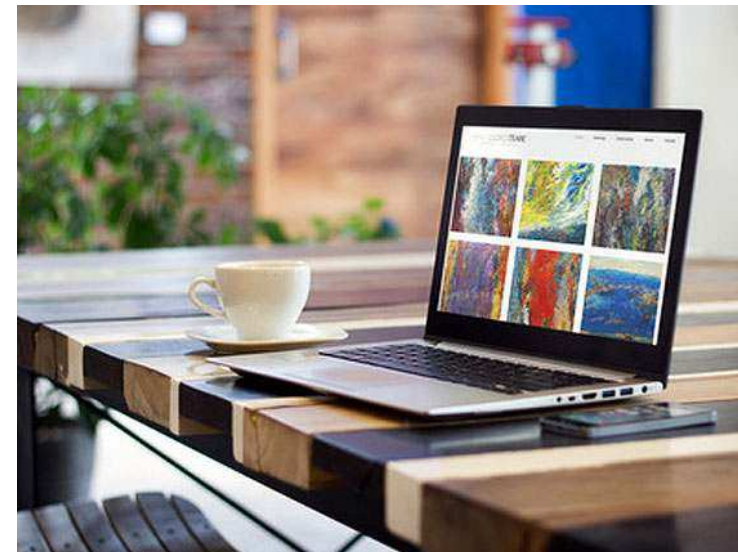


Steve
Steve Teare
Web Engineer

Bounce rate is the percentage of website visitors who navigate away from your site after viewing only one page. Below are the top 10 factors that are responsible for a site's high bounce rate. Ranked by priority, it's no surprise speed is number one.

1. Long page load time, i.e. slow website
2. Cluttered design with poor navigation
3. Non-responsive design
4. Obtrusive popup opt-in forms
5. Too many advertisements
6. Irrelevant advertisements
7. Broken links – 404 page not found, etc.
8. MySQL or PHP errors on posts and pages
9. Lack of credibility
10. Poor content

If your site has a bad bounce rate such as over 50 percent, maybe its time to look at those top items: speed and mobile branding. Our specialty! ■



▲ This case study is about building a web portfolio site for BradLloydTeare.com.

Published by **PagePipe**

100 East Bluff Street
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Performance engineering is a position found on web teams at large corporations. Their goal is studying loadtimes, server latency, throughput, and memory usage. They tune a website to achieve optimization goals that are within a performance budget. The budget is not specified in dollars but rather milliseconds. Web time is literally money.

Anything that slows down a website is “expensive” since it cuts into the allotted performance budget.

Performance engineering is idealistic – usually working towards the unachievable loadtime of zero seconds. A well-tuned site loads the Home page in under one second.

Before mobile applications and websites came along, no one worried about millisecond loadtimes. Well, some people did – but they weren’t making any news.

The invention of online tools to measure web performance helped produce de facto standards from experts at large-corporate laboratories. Speed became a competitive issue. Speed became more desirable and a hidden asset.

Speed is a website differentiator. Differentiation is part of creative marketing positioning strat-

egy. If two websites have equal offers, customers prefer a 1-second page rather than a heavier 10-second page. People don’t like to wait for services especially on the Internet. Plain and simple.

Our experience is no WordPress theme will produce a sub-second load time straight out-of-the-box. It will be more between 4 and 8 seconds. It requires customization, tweaking, and experimentation to get it slimmed down. Few web designers will do this extra work to deliver quality.

Is website optimization even significant for small businesses? Absolutely. More and more small business customers use phones and tablets to find, compare, and locate services. Slow wireless connections make optimization a necessity. If a site doesn’t fit and is slow on a phone screen, it’s immediately considered “old and obsolete.” It implies you’re business may be apathetic, uncaring, and behind the times.

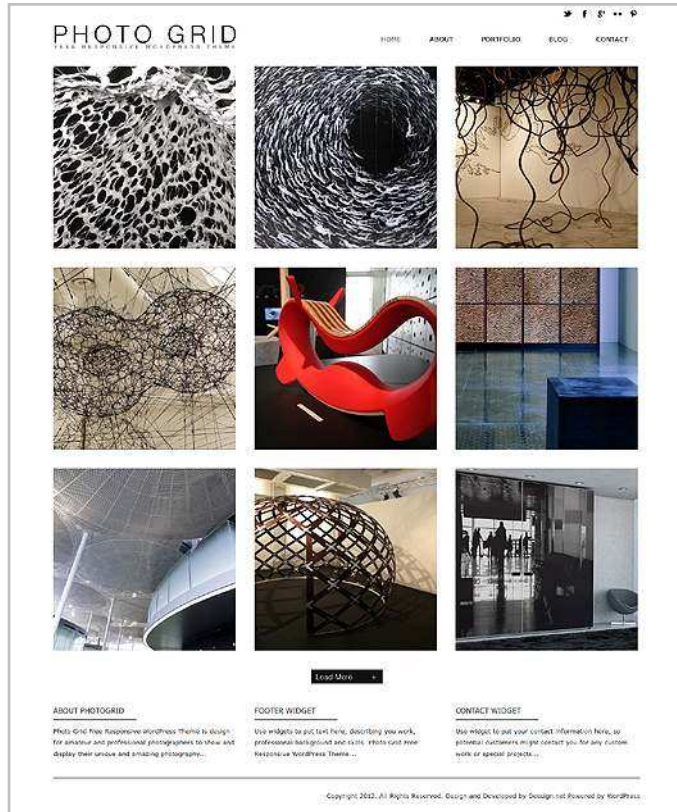
What we show you in this case study is how you can be a common-sense performance engineer and make your site experience the best. ■

So what? Why should I care?

This case study focuses on building an artist’s portfolio website. These are always challenging because they are large-image intensive. In the past, people expected longer loadtimes on portfolio sites and were usually willing to wait.

Times change but speed is as critical as ever. Because of mobile phones, we’ve stepped back to the years of dialup modem connections. But today’s users still expect mobile or responsive sites to be just as fast as wired, desktop browsers.

Why we chose WordPress PhotoGrid theme.



▲ **The theme demo.** Our client wanted a symmetrical, square grid with no clumsy captions underneath. The goal was a clean Bauhaus look. We didn't want any site features getting in the way of experiencing the colorful abstract art. The site needed to remain transparent or invisible.

PhotoGrid Responsive Theme is a free WordPress Theme with mobile and tablet responsive design. Grid-like design themes are perfect for photographers, artists, and illustrators showcasing their portfolio.

Masonry WordPress themes are different from grid-style themes. Masonry have captions under the images with “read more >” at the bottom. Text with rectangular images make for a choppy grid.

PhotoGrid Theme is not a fast theme out-of-the-box. We customized it. In this case study, we explain some of the changes we did to get a fast load on a low-cost shared server. We made 1.7 seconds. We tried. We could have made the one second goal but we would have had to sacrifice image quality. We didn't want that.

PhotoGrid is different from some themes that mimic Pinterest-style bottomless pages. PhotoGrid limits the initial load to just nine thumbnail images. If the viewer wants to append more images, they click or tap a button and more thumbnails appear. This is the way we wanted it for speed. Dividing the load is a good performance strategy. ■

From some simple tests using webpagetest.com, we've found that whatever a desktop speed is, it will translate into a mobile speed of about double. So a one-second page will take 2 seconds to load on a smartphone. If it's 4 seconds, that translates into 8 seconds. That's near the maximum wait time for humans: 10 seconds. On ecommerce sites, people leave in about 3 seconds.

Portfolio website for abstract art.

► **Brad's work uses** a special technique he developed called ThickPaint. It's also the name of his successful blog that's had over one million unique views.

We love Brad's abstract art.

We feel it's like looking into our subconscious. Much like images we imagine when gazing into the embers of a fire or waves of the sea. There's emotion in each piece.



Brad's original Home page concept.



▲ **Brad thought** the color palette should be “elegant.” We discussed that elegant included purples and metallics. Together, we agreed a “classic” palette was the real goal. Classic includes white, grays, cremes, and black. We used red as an accent for links.

There is no grid-theme layout like the one Brad envisioned where the body of text is next to a grid of square thumbnails. This could have been done with a lot of customizing with column plugins. It wasn't worth it because we wanted some automation to help create the Home page.



HEX #000000



HEX # FFFFFFFF



HEX #666666



HEX #333333



HEX #FF0000

▲ We chose simple colors for the website.

Custom logotype, buttons, and a headshot.

Brad provided the visual assets. Not only the large art shots but buttons and logo, too.

The original art shots were anywhere from 500k to 1M in page weight each.

PhotoGrid presents only nine images on the initial load. This was what we wanted. The option to then load more images divided the page weight reducing the first screen wait time.

But the thumbs were just resized big images (not cropped and optimized). The original page weight was 2M. Too much! We loved the theme format so we decided to create a workaround to reduce the page bloat.

Masonry-style themes automate cropping and optimization of thumbnails for the Home page. This was **not** the case with PhotoGrid. It was just resizing the image dimensions in code (a bad practice). That meant a small image would weigh just as much as the large original. Bad news for a fast load time – and smashed images were fuzzy and low quality.

PhotoGrid recommended we load the large art images on posts as the *Featured Image*. They would then load on the Home page 3x3 grid.

Instead, we uploaded a properly-sized and optimized thumb as each *Featured Image*. Then used *Add Media* for the large image into the page content. Page load time with a cleared cache was now under 2 seconds – instead of over 4 seconds. We weren't done tweaking yet. But we were getting closer. And we still had a cool automated grid.

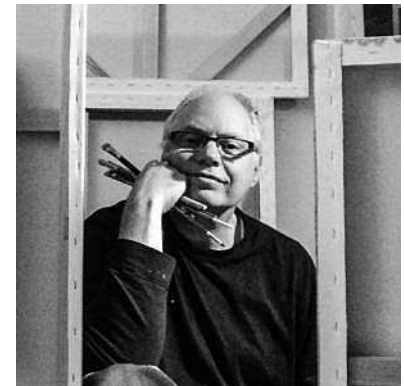
■

BRAD LLOYD TEARE
Abstract Evolution

BUY NOW

VIDEO

MORE PAINTINGS



17 plugins? Is that too many? Nope.

Only two plugins on this site affect page weight. They are: Responsive Video Shortcode (0.7k) and ToTop Link (0.3k). That's only 1k of the total 472k page weight. That's nothing.

Webpagetest.com says a JPEG setting of 50 is excellent and 70 is medium for speed. Because this is a portfolio website, we wanted to keep the images looking their best. Compromise is always needed between image quality and speed.

JPEG compression settings above 70 aren't visible or noticeable onscreen. Don't be wasteful.

It's 390k of image weight that slows things down. We optimized all JPEG images in Gimp (Save for web). The quality setting we used is 70. It's the quantity of images – not the file sizes – that bog down most portfolio pages. ■

■ **Akismet**
Protects from comment and trackback spam.

■ **One-Click Child Theme**
This plugin we added to keep new versions from nuking our code modifications by overwriting.

■ **BackWPup**
This plugin is great for backing up the entire website to DropBox's free online storage service.

■ **Simple Basic Contact Form**
Simple basic plug-n-play contact form for WordPress.

■ **P3 (Plugin Performance Profiler)**
See which plugins are slowing down your site. Then turn it off. It causes site drag. It's good just for troubleshooting.

■ **Limit Login Attempts**
Limit rate of login attempts, including by way of cookies, for each IP.

■ **CloudFlare**
CloudFlare integrates your site with the CloudFlare CDN platform. A CDN is supposed to speed up your site. This is rarely the case if you have optimized your site properly.

But CloudFlare also provides extra security to prevent site attacks. It did speed up second pageloads. We regularly were hitting 700 millisecond load times for the home page.

■ **Image Widget**
This plugin is a quick way to add images in sidebar or footer widgets without coding. We used it for a crop of Brad's headshot.

■ **Enable Media Replace**
Enable replacing media files by uploading a new file in the "Edit Media" section of the WordPress Media Library. This is a workaround when you have to swap images regularly in your media library.

■ **WP Super Cache**
Normally, we don't use this plugin but in this case, it was a fast way to get Gzip compression installed. Gzip reduces the file size of HTML, CSS, JS, and PHP by up to 70 percentage.

■ **Responsive Video Shortcodes**
This tiny plugin allows you to embed online video from YouTube, Vimeo and more for a responsive layout – they scale according to the screen size. It features shortcode and widget.

■ **ToTop Link**
A simple plugin for WordPress that adds an unobtrusive "back to top" link to the site. The link subtly appears after the page has been scrolled, and disappears once the user returns to the top of the page. Additionally, a smooth scrolling animation is added when the link is clicked or tapped.

■ **Insanity**
This is a great plugin for portfolio sites. The artist doesn't have to worry too much if the images are heavy. The plugin will auto-crop and optimize any oversized image to our specifications when it's uploaded. In our case that's 760 pixels wide.

■ **Optimize Database after Deleting Revisions**
WordPress never cleans out database backups. This does it.

■ **Simple Drop Cap**
Transforms the first letter of a word into a drop cap or initial letter simply by wrapping the word with shortcode [dropcap].

■ **Regenerate Thumbnails**
Allows you to regenerate all thumbnails after changing the thumbnail sizes. If a thumbnail needs to be 600 – 320 pixels you should never use a larger image. Any sort of resizing uses processing power and decreases image quality.

■ **Far Futures Expiration**
Improves site speed. You can set caching up to 365 days.

■ **WP jQuery Plus**
Reduces loadtime of jQuery by loading a compressed file from Google hosting.

HOME

Home Page Specifications

Yslow grade 96 A

Theme PhotoGrid Responsive
Zip folder size 282k
Decompressed 557k

Loadtime
cache cleared 1.7 seconds
cache full 887 milliseconds

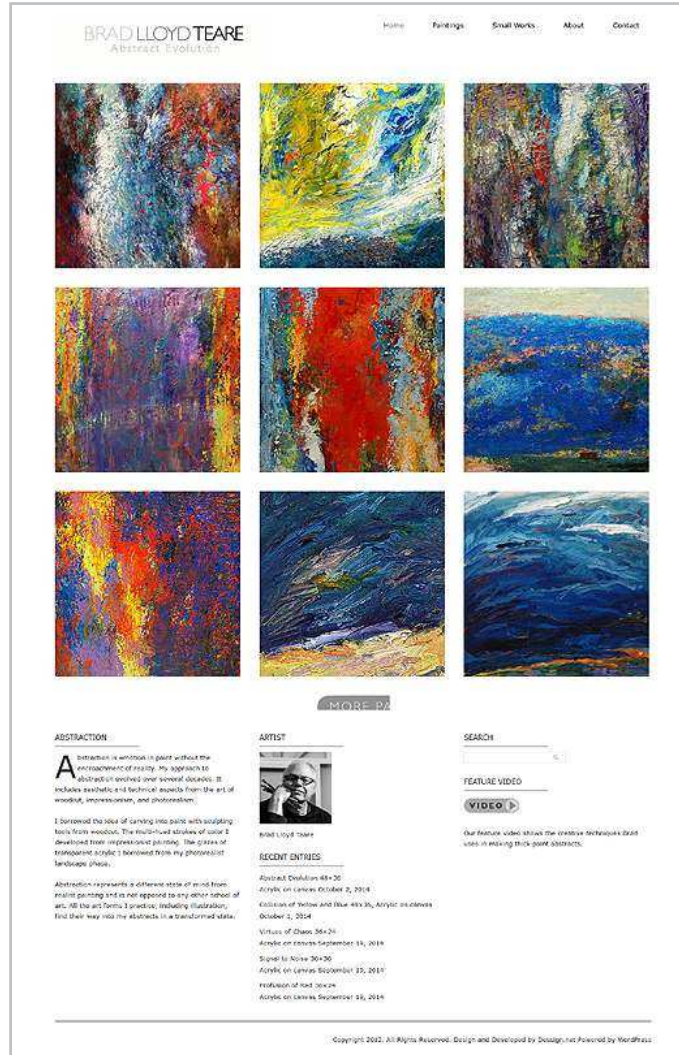
Total components 28

Server
 Shared Linux Apache

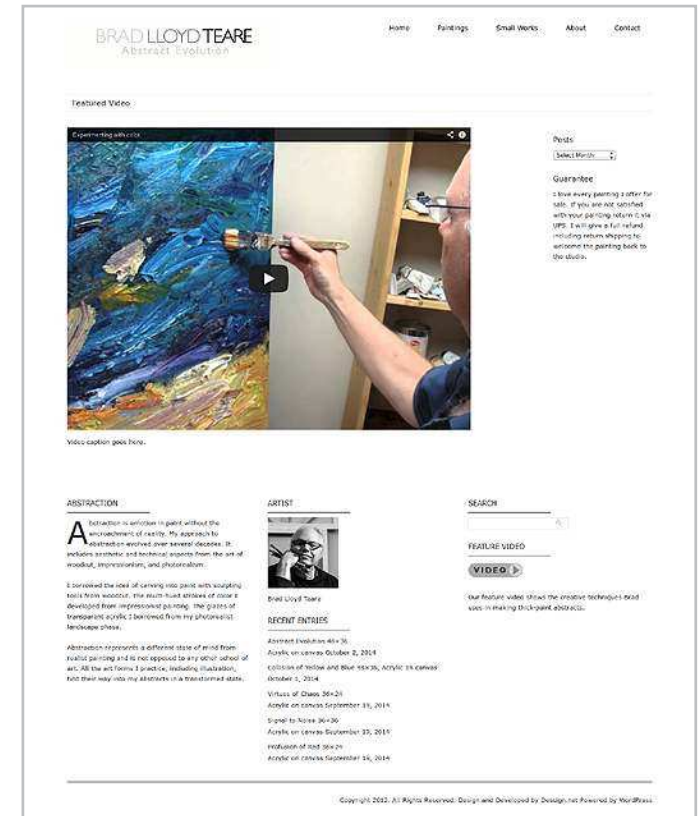
Page weight 472k / 6k

Plugins
 17 plugins *see page 8.*

Fonts
 Verdana and sans-serif default
 weightless browser fonts.



VIDEO



Choosing your portfolio images and text.

Selecting portfolio images is something only you can do. Keep things simple and organized. Remove decorative elements if they don't fit your goals and compliment your work. Don't overwhelm the potential client with too much. Place your best images to the front.

Best work promoted prominently.

Our research shows that after 9 images viewer interest starts to rolloff. Choose 9 to 12 of your best samples per site section or theme. Not sure which are your best pieces? Ask. Canvas qualified industry contacts, fellow-artists, former professors – they'll be happy to help. (Brad says, "Twenty art pieces at most.") We've seen this number elsewhere, too.

Focus your portfolio for a niche market.

Those who specialize usually can charge more than generalists. Decide on the type of client you want to work for, or the specific assignments you want to do, and build your website around those.

Good photo quality is important.

Make sure the photos are crisp, in focus, have proper lighting and a good background. You should also experiment with different view points.

Your About page.

Who are you? What qualifications and experience do you have? Why should viewers care about your work?

Are you trustworthy and reliable?

You can answer the trustworthy and reliable question in two ways. You can include testimonials from previous clients. Or tell ways in which you're a decent, normal person: you have a family, hobbies and so on.

Client testimonials persuade visitors you'll deliver on your promises. It increases the level of professionalism when incorporating testimonials into your portfolio. ■



▲ When viewed on a mobile phone, our site presents each of the thumbnails in a single column.

■ You may have more than one skill set you'd like to promote. Create a portfolio targeted to land a specific job and send it to a marketing director at a company. They'll appreciate that. It saves them time and shows you want the job. Even if its a one-page web portfolio.

We don't recommend a downloadable resume.

Don't mix in family photos or vacation stories in your portfolio. They're irrelevant. No music. No poetic navigation.

Resumes are an excuse to reject **you** for commissioned or assignment work. Once you send your resumé, a client can say, "Oh, they're missing this or they're missing that," and boom, you're out. How about instead – three letters of recommendation? Or a sophisticated project they can see or touch?

Hire Me page.

If your portfolio is a traditional showcase of your work, sticking a Hire-Me button, link or section on your site will get a better response because it's more of a "call-to-action." A Hire-me page should include all the information listed in an About page section.

Link to your hire page in a prominent way from your site's front page. If you want to get hired, be bold about it. Put a sign with the text: "For Hire" and a link to how to hire you. Describe yourself and your work in just a few words.

Stories About Your Art

You need to tell stories about your work – real, genuine stories. Stories about results. What did it do for your client? How did they enjoy your work?

Let people know what the assignment was.

Where is it published? What problems did you solve for your client? What was the result of your work? For each item, provide the client name, your role in the project, the date, and any software or special skills used.

Potential clients are sometimes more interested in the story than the work itself. By focusing on the end result, you're focusing on what potential clients want. Include a brief background about each work sample: What were its objectives? What results did it generate? Why are you proud of it? How did it help your client? ■

Is using Verdana font a bad choice?

In the past, most websites used the same 4 or 5 typefaces over and over. These are web-safe fonts and found on computers still today. They are fonts like Arial, Helvetica, Georgia, or Verdana. They load fast because they aren't called from a server. Web-safe fonts are resident on every user's computer.

Consider web-safe fonts generic and thus transparent or unnoticed. This is a good thing. The type doesn't get in the way of the message like a decorative font could. If you want to be creative, we recommend not doing it with fonts.

Verdana is a humanist sans-serif designed for

Microsoft nearly two decades ago. It's the font used on the PhotoGrid theme. Verdana has great screen legibility.

Microsoft designed Verdana for screen reading. Yet, Verdana can be attractive on paper. Because it's spaced for the screen, it has a typewriter-like feel on paper. But this face was not designed for style, rather for function, and the screen dictated the design.

Our point is not to use Verdana without purpose. Consider it's readability, legibility, speed, and cross-device, cross-platform, cross-browser compatibility. ■

According to one long-running survey, Verdana availability is:

Windows: 99 percent
Mac OS: 98 percent
Linux: 68 percent
iPhone and iPad: 100 percent



▲ **In recent times**, IKEA, the Scandinavian furniture company, switched from Futura to Verdana as their corporate font. The design world went rabid with disgust. What the designers missed is IKEA wanted uniformity across all of its media both print and web. And they actually wanted the transparency of a font no one notices.

BEFORE

Ikea Sans

AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPp
QqRrSsTtUuVvWwXxYyZz1234567890

AFTER

Verdana

AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPp
QqRrSsTtUuVvWwXxYyZz1234567890

Portfolio sites need squeezing for speed.

Reducing the page weight for this portfolio site was a challenge. The initial test was a 2MB page weight and a rating of “C” on Yslow with a rank of 83. Ouch! We were off to a bad start.

We dove into finding image compression and load splitting strategies first. This brought the weight down to around 1MB. We describe some of this back on pages 7 and 8. Optimizing the thumbs instead of smashing them in HTML code was the next big gain. Getting us down around 500MB.

There were some heavy files associated with jQuery. One was a WordPress jQuery (95.7k) and a weird version called “jQuery-latest.js.” (281k). Neither of these duplicate fat files had Gzip compression even though we had Gzip enabled via .htaccess on the server.

How we attacked this bloat:

1. We loaded the WordPress plugin called “WP jQuery Plus” It loads jQuery as a Gzip compressed file from Google hosting. The file went from 95.7k to 33.2k – great gain for our performance budget.

2. We downloaded “jQuery-latest.js” and opened it up. The file was not minified. Using FTP, we copied the code and pasted it into one of many free, online Javascript code compressors. With one button click, we minified the code. We copied and pasted this back into the file and uploaded it via FTP, overwriting the old file. This reduced the file size by 51 percent. It then Gzipped to a final size of 98.1k.

Before, those two files together were 376.7k. Now they were 131.3k – a 65 percent reduction.

We were now down as far as we could get in weight at 472k as measured on webpagetest.com.

To attempt squeezing a little more speed, we did some caching using CloudFlare CDN, Far Futures Expiration plugin, Optimize Database, and WP Super Cache. These are all free services and plugins. The combination made the return visitors load to be only 6k. Yes. Only 6k!

Our final load times: 1.6 seconds on the first view and 887 milliseconds on the second view. Yslow grade “A”, rating 96. It can be done! ■



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