Rethinking access to address the digital divide in news

Professional project report submitted in partial fulfillment of the requirements for the degree of Master of Arts in Journalism from the School of Journalism, University of Missouri

---

By Emily Stewart, Spring 2014

Submitted to:
Mike McKean (Chair)
Associate Professor, Missouri School of Journalism
Director of the Futures Lab, Reynolds Journalism Institute
Mizzou Advantage Media of the Future Facilitator

Ryan Thomas, Ph.D.
Assistant Professor, Journalism Studies
Missouri School of Journalism

Charlie Triplett
Web Designer
University of Missouri Web Communications

Table of Contents

Introduction

My passion for greater accessibility in news websites is best understood by examining the three depths of competency in my journey as a multimedia designer and how it led to an awareness of ethical concerns in mainstream news media.

During my senior year as an undergraduate at the Missouri School of Journalism, I enrolled in a course called "Multimedia Planning and Design." Throughout the semester I was exposed to Web design and development and quickly became enamored with the craft. Line by line I learned to build websites from my new, blank canvas—a text editor—awestruck when I could create interactive elements on a webpage. I started to explore the realm of user experience and would experiment with what made a news site more engaging.

I had always admired beautiful design, but never thought I possessed the talent to be a designer. With serious encouragement from my boss, a graphic and Web designer, I completely changed my undergraduate path from multimedia reporting to multimedia design. I obsessively absorbed design podcasts, literature and advice, gaining a deep respect of the fundamentals of design: hierarchy, typography, layout, color theory and craftsmanship.

This foundational education—the first depth, I soon learned—was merely a shallow dive. I had barely scratched the surface of the meaning of design and how to be an effective visual communicator.

Meanwhile, I was given opportunity to put my newfound design knowledge to use at my multimedia production job in the College of Engineering. What began as a cautious foray to develop a dry, procedural infographic evolved into motion video graphics, page templates and, eventually, development of a responsive website from

concept to finish. During this time, I had the opportunity to work alongside my superior and learn as an apprentice.

Before beginning graduate school, I spent a summer working as the sole design intern for *Mag+*[1] in New York. Upon my return that fall, the magazine sequence at the Missouri School of Journalism asked me to spend a semester training students on how to use the software for their iPad edition of *Vox* magazine.

I wanted to contribute as much as possible to the longevity and success of the app. I provided the department with a mini-curriculum on a very technical piece of software, in order to help them sustain the app between semesters. To my knowledge, providing this type of training for *Vox* was something that no one had done before.

Because universal learning is a concept close to my heart, I strived to incorporate different teaching methods to accommodate the students. I did this by holding office hours, completing a total of nine in-person training sessions, providing demo files and creating a five-part tutorial screencast. I made sure to divide the tutorials into manageable chunks and walk through specific examples.

Although the students were roughly the same age as me, I believe I earned their respect by demonstrating leadership skills and compassion. Not only did I walk through the technical execution, but I also encouraged discourse on designing for multimedia versus designing for print. I dissected each page and every issue—spending hours giving complete and honest design feedback, which is crucial to growing as a designer.

The second depth of my design journey—understanding user-centered design—was partially due to this experience of leading a classroom environment. Thinking like a beginner instilled in me notions of communication, feedback loops and learning styles.

---

[1] *http://www.magplus.com/*

It was also a result of the opportunity to work with my design mentor to create sites for the College of Engineering.

As an apprentice, I was introduced to and expected to abide by Web standards. Concepts such as usability and semantic markup were imperative. Seeing the world through the user's eyes was an expectation in every design decision. Simultaneously, Ethan Marcotte's *Responsive Web Design* and Luke Wroblewski's *Mobile First* books were redefining and setting new standards in the Web design world. Both books were extremely influential on my approach to Web design. The *Mobile First* mentality preaches that designing for small screen sizes first and gracefully transitioning to larger desktops will ultimately make a better experience for all users. Wroblewski's belief is that small screens have less real estate for extraneous elements and force the designer to focus on what is necessary to the user.

Using the *Mobile First* approach, I gained a solid understanding of the importance of content-driven, device-agnostic design. I patted myself on the back for creating websites that were usable on a myriad of devices. It was not until September 2012, when I attended the *Accessibility Summit* webinar that I realized that the industry's definition of usability was excluding an entire sector of the population. I had naïvely grouped all users together—never stopping to consider the degree of their abilities. I was unknowingly guilty of creating barriers-to-access that stemmed from design decisions based on average user expectations.

As I began to embrace accessibility, I saw that designing for the typical user was a way for me to validate the exclusion of fringe cases. Studying universal design books such as Don Norman's *The Design of Everyday Things*, I began to see accessibility as a core tenet of great design, not as a retrofit option.

The passion that fueled the accessibility evangelists at that webinar was contagious and has transformed me into an advocate for the disabled community. With this expanded consciousness, exploration of a website's source code (the guts of a website) has left me feeling appalled; I find multiple barriers for users with disabilities at every turn.

As news platforms shift focus to producing more content online, the issue of incorporating attractive and user-centered design into traditional journalism websites is becoming an increasingly prevalent problem. Few multimedia journalists are actually acquiring the skills needed to work toward a solution, and the industry has few minds that understand both the profound importance of storytelling and the critical fundamentals to accessible design.

Being a problem-solver at heart, I felt compelled to find a solution at this third depth of design. I wanted go beyond the industry standard of average websites for average people. The clearest path for doing so was to make websites that respect all users, leading to what my academic and professional experience has shown me is a better user experience for everyone.

For my professional project, I created *NewsA11y*, a prototype web app that facilitates dialogue about the barriers-to-access that people with disabilities encounter.

I believe *NewsA11y* urgently needs to exist to help the journalism industry meet its obligations to society. My academic and professional experience have uniquely placed me in a position to develop this project.

Multimedia design and its relationship with journalism is the core of my education, and together the pair form my foremost passion. My purpose is to serve as a bridge between the journalism, design and accessibility world, facilitating the development of visual components that enhance viewer understanding and experience.

Weekly Field Notes

WEEK ONE

Workspace Setup

My primary objective this week was to establish a set schedule so that I could dive into *NewsA11y*. Using the project management software, *Basecamp*, I set milestone dates and to-do checklists to help myself stay on track.

WebCom has done an amazing job in providing a workspace that is conducive to my research. I couldn't be more grateful for a seamless transition.

Accessibility Summit

My secondary objective was attending the two-day webinar Accessibility Summit, which was fantastic. Connecting with a community that was so passionate about accessibility was an excellent kickoff to my professional project.

One of my favorite sessions was by Elle Waters, where she eloquently described the mindfulness of accessibility. Her presentation was captivating and was a good reminder that this field shouldn't be evangelized with a systematic approach. She did a remarkable job of humanizing accessibility through personal stories and metaphors.

Research, Research, Research

Yesterday I called the staff at Wolfner Library in hopes that I could talk to them about my professional project. Ideally, they'll put me in touch with users with disabilities, so I can get a feel for barriers-to-access they encounter while trying to consume news

online. They seem very enthusiastic about my project and are talking it over with their superior.

I also enrolled in two online accessibility courses this week:

1. Intro to Web Accessibility with Google
2. Using iPad with VoiceOver

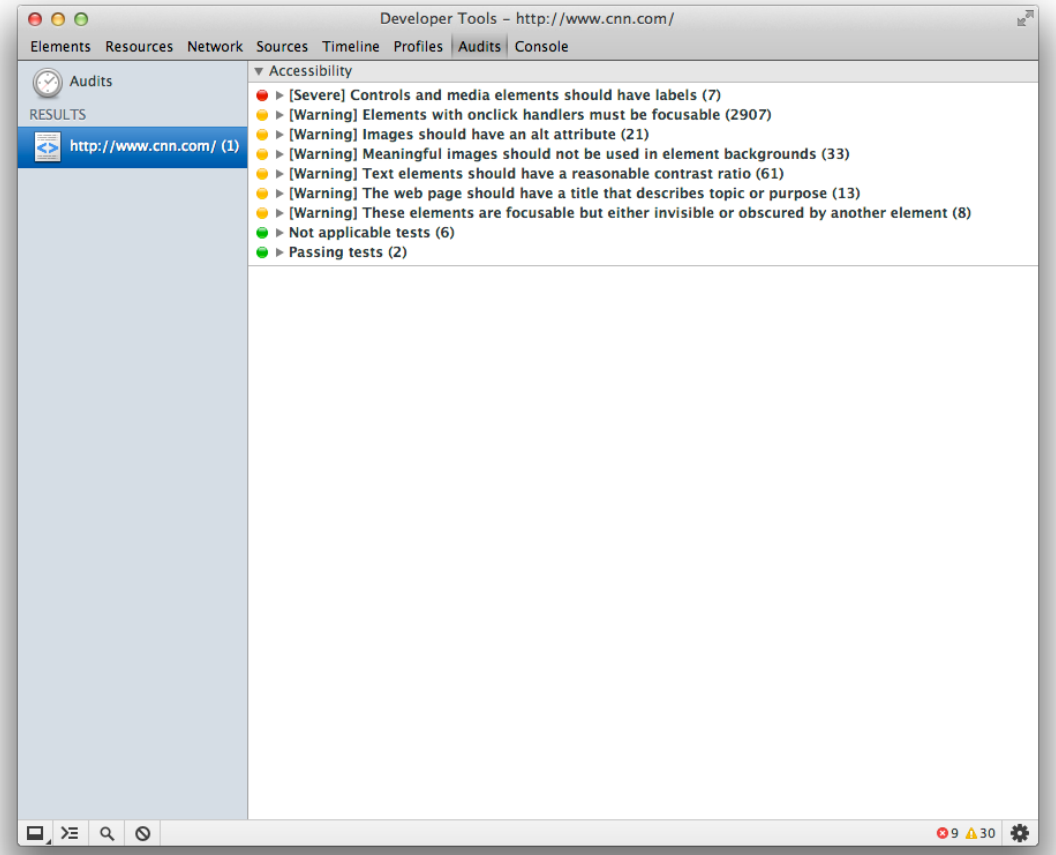
I completed the iPad course already and found it fairly helpful. VoiceOver is Apple's built-in screenreader, that helps people with vision-impairments interact with their device (on both Mac and iOS). I feel very proficient/advanced using VoiceOver now.

Google's course has been helpful, too. The first lesson was information I already knew. However, it did familiarize me with Chrome's free screenreader—ChromeVox—which I find much more intuitive than VoiceOver. It's a bit buggier, but none-the-less a huge gain for users who might not have access to the expensive screenreader alternatives to VoiceOver.

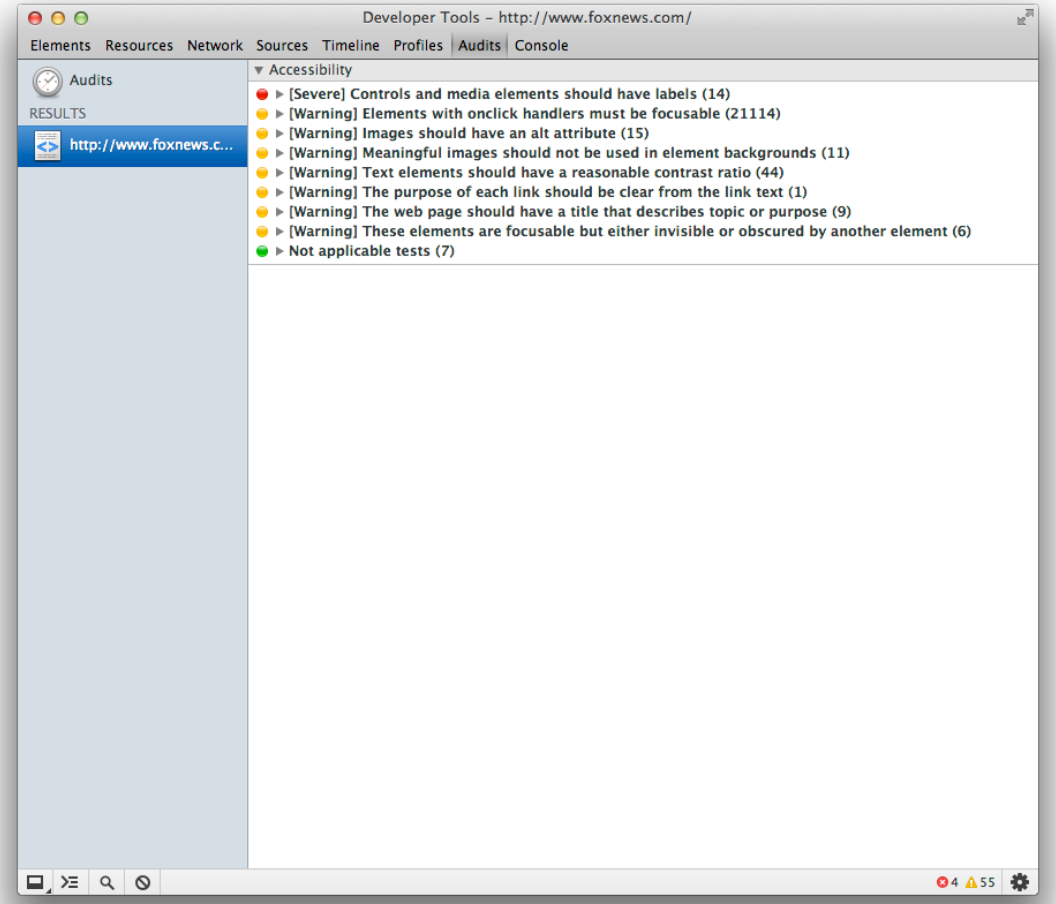
Google's course also allowed me to do some preliminary, automatic testing of accessibility compliance on the homepage of major American news sites.

Wow. Can't say I expected anything different, but it was a bit **mind-blowing** that of the 5 I tested (CNN, Fox, NBC, NYTimes and USAToday) every single site had **severe failures.**

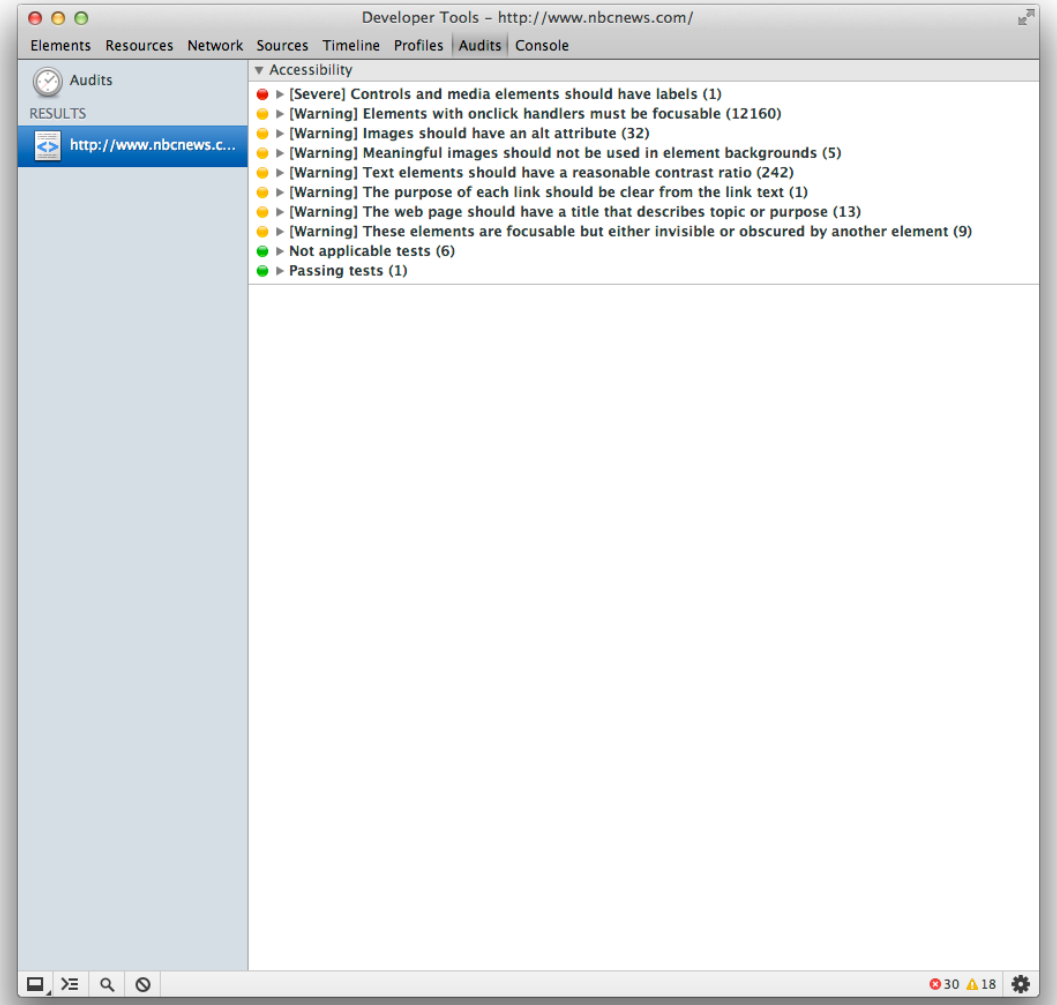
USAToday passed Google's accessibility audit the best of the five. It's interesting to note that they went through a major redesign recently.



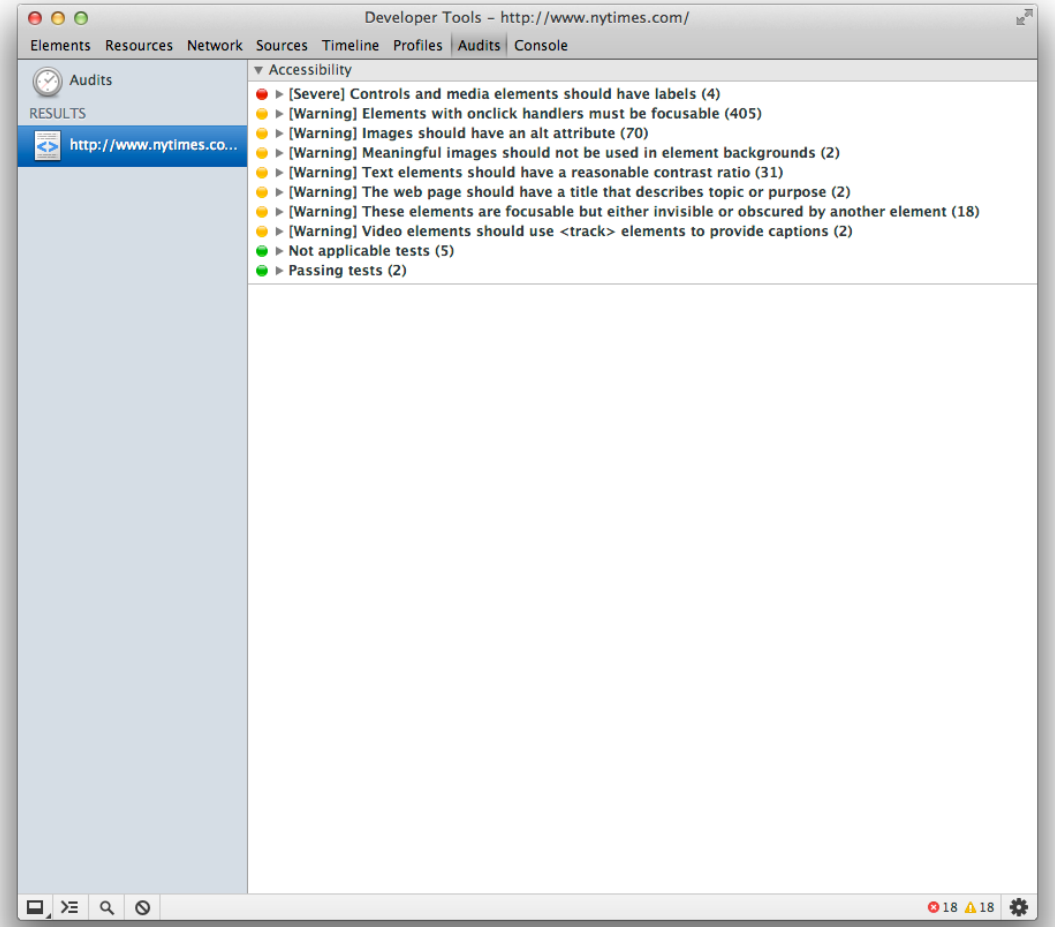
(Above) CNN had 7 severe barriers-to-access on their homepage.



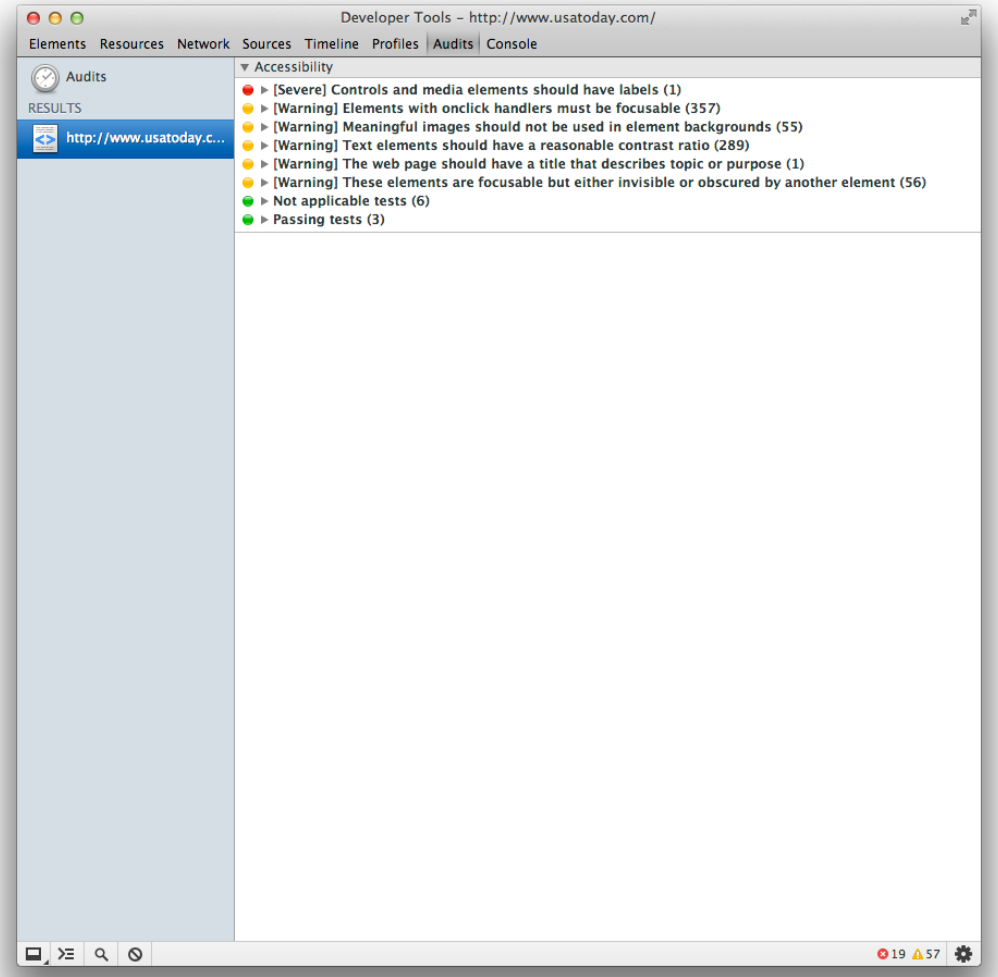
(Above) Fox's homepage failed to pass a single category on the accessibility audit.



(Above) NBC had one major barrier-to-access.



(Above) NYTimes.



(Above) USAToday's homepage wins the award for being the least inaccessible homepage, although the standards are not high.

I'm looking forward to bringing these issues to light in a way that doesn't publicly shame media organizations; rather encourages dialogue about solutions.

WEEK TWO

Humanizing Accessibility

The Wolfner Library staff got back to me and it turned out to be a bit of a bust. However, they did point me to a few organizations that might be more helpful.

So, in the meantime, I've been connecting to users with disabilities via Twitter and reading everything possible in an attempt to collect stories about common barriers-to-access experienced. My hope is that these stories will help bring alive the consequences of inaccessible news sites.

I've found two users who have agreed to be interviewed. One user has a motor impairment and the other has a visual impairment. It's not much, but it's a starting point.

Also, this post was encouraging to find. It was posted on a reputable forum, *AppleVis*, that focuses on vision accommodations in Apple products and iOS/Mac OS applications.

Seeking News App Recommendation

Submitted by Misty Dawn on 31 August, 2013 - 12:44
Posted in:
iOS & iOS App Discussion
I am looking for an accessible news app. Here are some of my preferences: U.S. centered from multiple news sources, customizable local news, push notifications for stories I want to follow closely, up-to-the-minute updates for breaking news and an accessible social/sharing option Which accessible app do you think would best meet my specifications?

Login or register to post comments

This isn't the first post I've found like that either.

Accessibility Training Courses

I'm halfway finished with Google's web accessibility course. It's definitely focused on the technical side, but is a nice contrast to the interviews I'll be conducting.

I also enrolled in Perspectives on Disability, an online course provided by Northern Illinois University. I'm excited about it, because it seems to be more dialogue based and I have a feeling I'll gain a lot of connections from it.

Although the initial user interviews didn't pan out, I'm still keeping my head up and moving forward. Thankfully the disabled community is an extremely passionate bunch, so I'm not worried about finding more interviewees.

WEEK THREE

Choosing Standards

This week I've been primarily concerned with choosing a set of standards—as a starting point—to evaluate the accessibility of the aforementioned news websites.

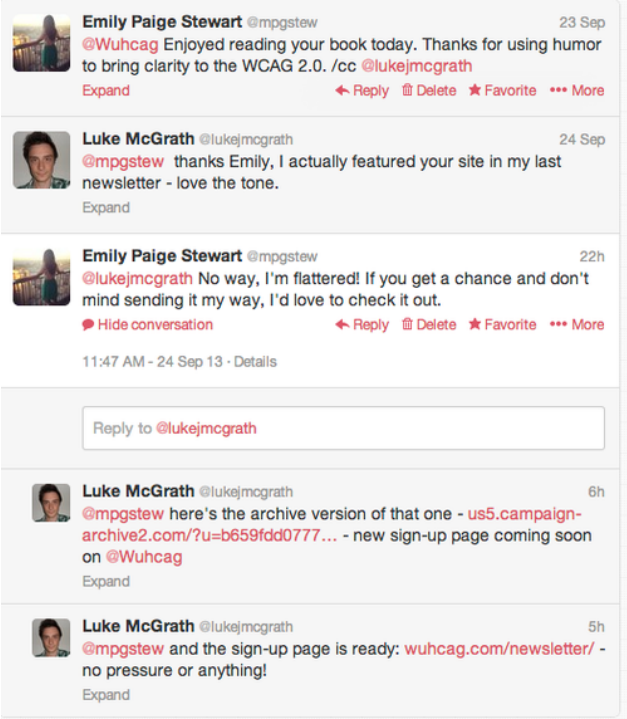
The W3C's Accessibility Standards called "Web Content Accessibility Guidelines" (WCAG) are, at best, verbose and cumbersome to read. If you print it out it totals around 700+ pages full of technical, industry-specific language.

Needless to say, it's a document that's pretty hard to digest. Thankfully, I was able to spend Monday reading Luke McGrath's "How to meet the Web Content Accessibility Guidelines 2.0," who in roughly 100 pages brings tremendous clarity to the *WCAG 2.0.*

I'll be a using a hybrid approach for testing: *WCAG 2.0, Accessibility 2.0,* interviews with users, usability testing and user feedback. *Accessibility 2.0* was created after the authors became frustrated with the direction of the *WCAG 2.0.* One reason I find it relevant is because it addresses cognitive disabilities, which the WCAG 2.0 has been criticized for neglecting.

Encouragement from the Field

After tweeting Luke to let him know I found his book helpful, he responded with quite flattering news. He told me they featured my portfolio on a prior newsletter. Too cool!



These little bits of encouragement mean the world to me. Side note: I find it very annoying that Tumblr doesn't allow me to add ALT text (hidden text used by screen readers that is beneficial for people who have vision impairments).

Preliminary Testing

I've been doing the testing I'm able to do to make sure I stay on track with my project. If interested, I can blog the evaluation as I go or post a more cohesive presentation of what I find.

SecondConf

This past weekend I attended SecondConf in Chicago which was an incredibly rewarding experience. I was able to make some solid connections and learn quite a bit. The best part was realizing other people are actually interested in my work and the passion I have for accessibility. So interested that they expressed potential interest in publishing my thoughts and in working with me after graduation. We'll see how it all plays out.

WEEK FOUR + FIVE

Skill Development

Last week I wrapped up Google's Web Accessibility Course. I gained quite a bit of technical knowledge for implementing accommodations for vision and motor impairments. I also set up my work environment so that I can rapidly begin developing NewsA11y, once the sketches are done.

Community Outreach

I've touched base again with a few people to get feedback and insight on consuming news online with a disability. I also attended the Campus Content Creators meeting which was focused on writing inclusive, plain language for the web. This is especially relevant to creating content that is accommodating for cognitive disabilities.

Afterwards I was able to chat with Barbara Hammer, Director of Office of Disability Services, and update her on the progress of *NewsA11y*. She pointed me to a few more resources and was very encouraging.

Sketches, Personas, Process

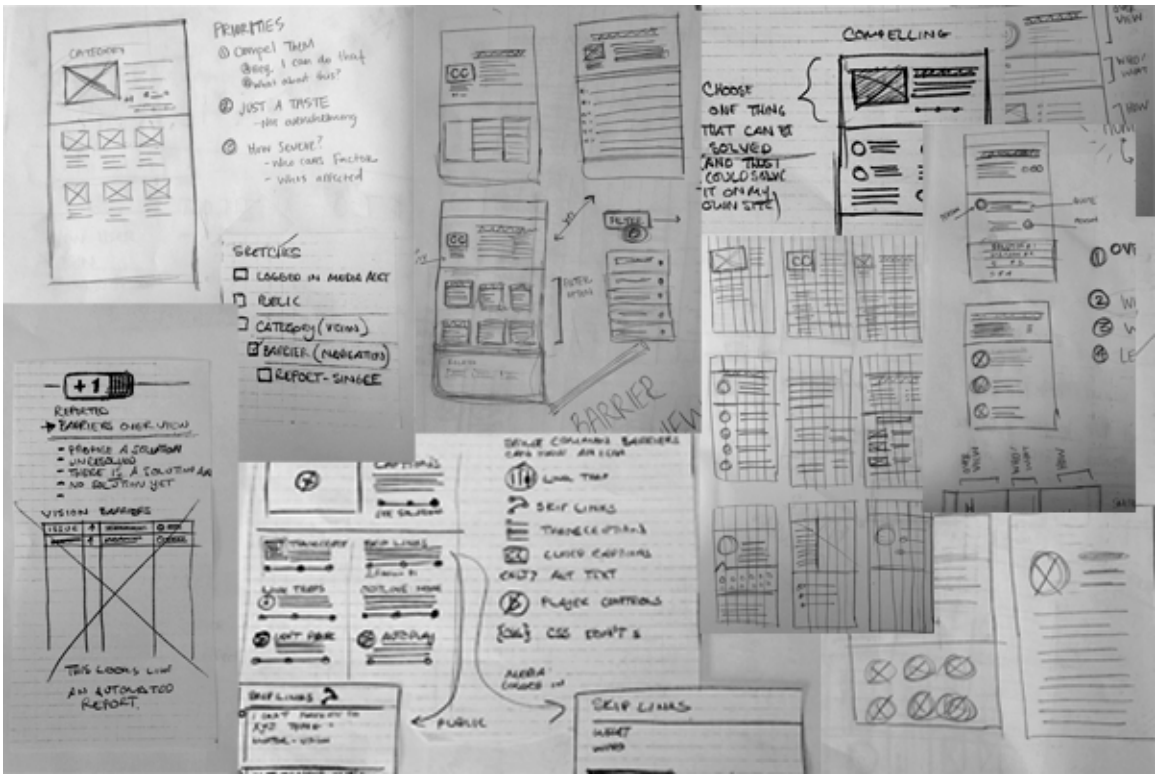
This week has been a **blast.** I've been able to dive into my favorite part of working in the creative industry: looking at the big picture and problem-solving.

I've started mapping out all of the views that will need to be created and how I envision the design. Quite a few times I've had to play devil's advocate to make sure I'm not making false assumptions.

I find it extremely helpful while designing to create personas and approach the problem from that perspective. Thinking through how I might use *NewsA11y* as someone who has a motor impairment is completely different from how I might use *NewsA11y* as a web designer at MajorNewsOutlet.biz.

One thing I've iterated from the beginning is that this is **not** a public shaming app. Creating *NewsA11y* puts me in an interesting position, given that I'm both a designer and front-end developer. Essentially, I'm trying to compel media stakeholders—**like**

myself—to make their site more accessible. I'm not interested in telling people they're wrong. I'm interested in creating a place that focuses on collaborating to find the best possible solution.



A few sketches for the barrier and accommodation category pages.

Goals:

1. Facilitate a platform that allows the disabled community to **voice barriers** they encounter on news sites
2. **Educate** web designers, developers & media stakeholders
3. **Compel** makers of the web to create **innovative** solutions to minimize barriers-to-access

Questions:

- How do I get media stakeholders to care?

- How do I engage designers/developers to contribute solutions and want to share their approach?
- How do I ensure users with disabilities that their voice is being heard?

Sure, this is incredibly challenging and I might miss the mark completely. But if learn how to create experiences that are more accessible and benefit people, then it is worth it to me. Working through these challenges is the aspect of design I adore the most.

WEEK SIX + SEVEN

Post-it Notes, Wireframes, Sketches

Last week I was able to nail down the information hierarchy of the site. I find using Post-it Notes help tremendously when figuring out taxonomies and categorical information, because it allows me to rapidly organize information in a tactile manner.

At times this became incredibly frustrating and overwhelming, because I felt like I was just spinning my wheels. I kept hitting creative blocks and arriving at the same solutions. But thanks to my coworkers, I was able to push through it successfully.

Friday was a major breakthrough in wireframing the app. I finally—after talking it through with Charlie—was able to reach a point where I felt confident in the design solution.

I believe the views address all of the concerns and goals I mentioned in the previous field notes to the best of my ability.

Form Submission

This week Charlie has been helping me get the bare bones of the app into development. We decided that Gravity Forms will be the best fit for a form plugin.

I was able to connect with an **accessibility lead** and **developer** at a major financial corporation who uses Gravity Forms and has already worked through many of the problems I am encountering. He was very excited to hear about *NewsA11y* and shared access to some of his team's source code that will be tremendously helpful.

Interviews

Another interviewee got back to me who uses accommodations for vision impairments. His responses were really insightful and made me think through the way designers and developers approach adjusting text size on websites.

Backend Implementation

This week has been going really well with getting the structure of the app set up. I'm hoping by next week to be able to do some preliminary styling.

WEEK EIGHT + NINE

Aesthetics, Typography, Concrete Visuals

Now that the structure and basic functionality has been developed, I've been able to focus on styling the site. I always find this part really rewarding, because it allows me to see visible progress and I get instant gratification for my effort.

The first part of the week 8 was spent wrapping up backend functionality after a change in direction. I believe that design and development are an iterative process, so rapid decisions like this are to be expected.

I then spent my time heavily focused on typography and creating a harmonious scale. I want to create a platform that people are proud to publish their content on, so getting this right was imperative.

Motivating People to Participate

Throughout this project I've been focusing on how sites get people in our industry to do things. For instance, Treehouse does an amazing job at motivating people to pay to learn technical skills. I pay for $9 a month to have an account with them, because they make **learning rewarding.** The content is unmatched and they break it down into feasible chunks. They gamify education by giving points and badges for completing quizzes and code challenges. I pay Treehouse to do all of the heavy lifting and in return I'm given access to a platform that helps advance me in my career.

So, how do companies get people to give with nothing tangible in return?

Better said, why are people so proud to publish content on sites like Medium, Svbtle, Dribbble? Why don't they just put it on a regular blog?

Because those sites **cared** about the user experience and wanted to create a sense of community. The priorities were on the user's needs and not on the investors' needs. The teams behind those sites didn't just slop a blog together and focus on how to

generate advertising revenue. They addressed a need that wasn't being fulfilled elsewhere on the web: they created a platform where their tribe could be heard.

That is my greatest hope with *NewsA11y*.

WEEK TEN

Why NewsA11y Matters

This week started out incredibly frustrating. I've been swapping out placeholder content and have had to spend a lot of time revisiting the W3C WCAG 2.0 again. Half a bottle of ibuprofen and a few trips to Starbucks later, I managed to find the resources I needed.

It was a profound reminder to why our industry has a misconception that accessibility is hard and cumbersome. If someone had explained accessibility to me by forwarding that link, I'd run in the opposite direction as fast as possible.

We need to stop talking to people like they're computers and use plain language. That's something that's been baked into *NewsA11y* from its inception. Laser focus has been placed on giving the user a voice, not regurgitating a checklist of things to do/not do.

Why Checklists Don't Work (Again)

In developing and designing the app, I've been able to recognize specific examples of why automated accessibility/usability tests are ineffective. In order to validate markup by W3C's standards, you cannot wrap a in an <a href>. However, the design calls

for a subtle highlighting effect when the user hovers or focuses on that element. Keyboard users rely on :focus and :focus can only be used on an <a href>.

Therefore, I'm left with three options:

1. Forgo design decision
2. Write valid markup, but ignore keyboard users
3. Write invalid markup, but include keyboard users

My first step was to evaluate the design decision. Did it help the user or was it unnecessary? After concluding that wasn't being used as a decoration, I thought through how I could possibly solve this problem and still have valid markup. I talked it through with a few coworkers and we determined that it couldn't be done.

Unsurprisingly, I went with option three.

A different kind of validation

Wednesday I stumbled across a site I had forgotten I had applied to be a Beta user for last May. Forrst is a site where developers and designers can get feedback on projects by other professionals. I noticed I had been accepted and decided to check out their recently redesigned website. I was elated because not only did I realize that Forrst had similar problems to solve as *NewsA11y*, but that we both approached the solution in a similar manner. Both *NewsA11y* and Forrst are tasked with motivating designers and developers to engage with the platform, which is admittedly challenging. Had this been logo or identity design, finding a similar design execution would be incredibly off putting, but in this particular instance I felt slightly validated.

I am a little nervous, though, because I feel everything is moving a little too fast. Next week I'll begin to gather assets to put together the Kickstarter campaign. Overall, I'm really excited and pleased with how all of the pieces are starting to come together.

WEEK ELEVEN

After meeting with Martha and Dr. Thomas to discuss the pros and cons of each scenario, I feel much more **confident** in my decision.

As my project approaches the original end date, I'm faced with a tough choice: 1) extend my project timeline and graduate in May or 2) race to the finish line and graduate in December.

The truth is, I **care too much** about *NewsA11y* to defend it at this point. Seeing everything rapidly come together has been the most rewarding part of my grad school career. Creating the prototype app has been a huge undertaking, but knowing it adds value to the web keeps me motivated.

I've been moving at a steady pace and am genuinely excited by the progress that has been made. However, racing to the finish line would leave my heart and vision for *NewsA11y* out of the question. And most importantly, it would be a complete disservice to all the people who care about it.

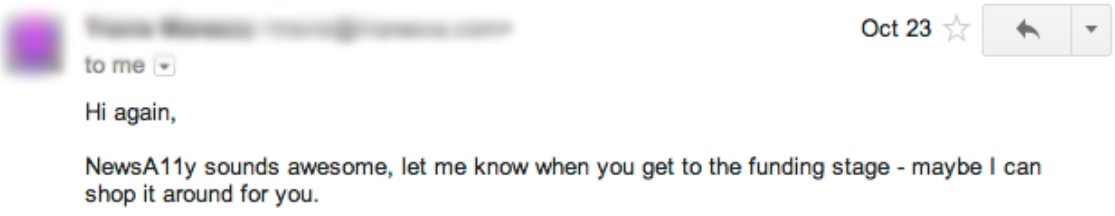


Image 1: It's encouraging to see someone noteworthy in our industry interested in helping with crowdfunding, especially because it wasn't mentioned in prior conversation.

Image 2: Flattering and has potential to be a good promo for the project.

I'm honestly not trying to drag this out; I'm well aware that missed ship dates in creative industry can kill a project's momentum. Part of me is attracted the idea of wrapping everything up, defending and graduating in December. Not being able to do freelance work has financially been a huge burden. And every time I see an article published on accessibility, I have a slight heart palpitation thinking that someone "beat me to it."

But I **believe** in this project. I believe in the value of taking time to reflect on my work and writing a meaningful analysis. Therefore, I've decided to **extend my project timeline** and **graduate in May.**

WEEK TWELVE

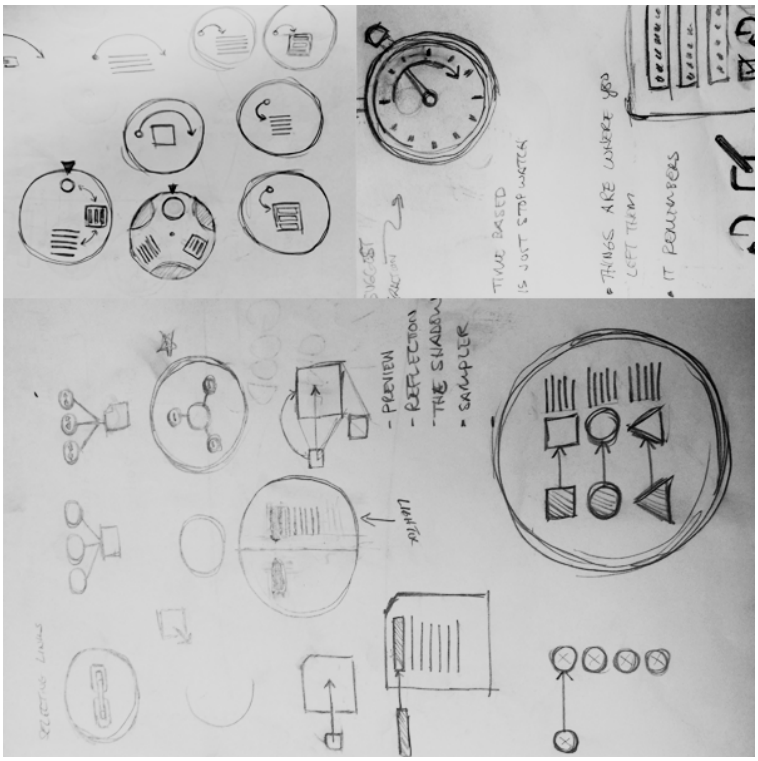
Since the decision to extend my project timeline, everything has been going much more smoothly. Being in Arkansas for Thanksgiving Break has allowed me to spend time reflecting on what I've learned so far. It also has given me an opportunity to critique the decisions and direction *NewsA11y* is headed in.

Lately, I've been focused on ensuring that *NewsA11y* is taken seriously. I have my fingers crossed that it will get funded, but know that most people have to **trust** a project before they are motivated to support it.

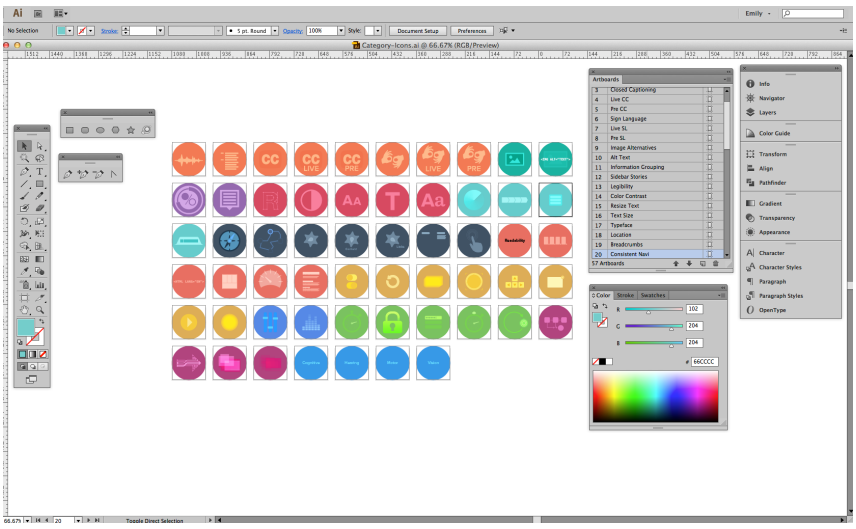
One way to establish product trust is to maintain a cohesive brand identity. I've always loved how TeamTreehouse uses badges to create visual hierarchy in categories—resulting in a well-packaged identity.

I knew taking a similar approach to *NewsA11y* would be challenging, because many of the categories are incredibly abstract and complex. Many of the categories haven't been tackled from this viewpoint before—at least not publicly. I strived to make most of them non-representational as possible. Since the icons will never stand on their own

—they'll always have the accompanying category name—I don't have to be as blatant in my execution. I'm pleased with how they turned out.



Sketching and purging ideas.



57 icons and counting.

The icon for the "location" category. Catering to this accommodation means users are able to comprehend scope of the site. Therefore I executed a radar to imply scanning.

Icon for Background Noise category. Not totally original, but still conveys the idea in a meaningful way.

Icon for Keyboard Friendly category.

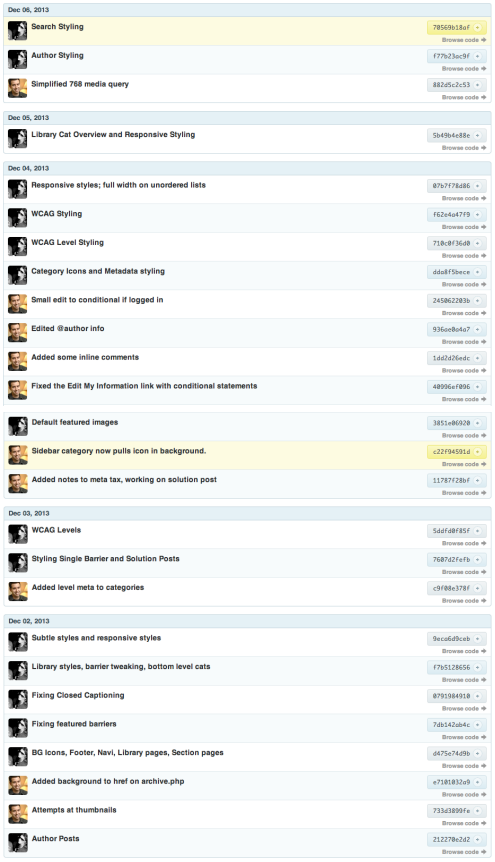
It elevates the site from a "student project" to a real, working prototype.

WEEK THIRTEEN

After switching gears to work on identity and icons last week, I spent the majority of this week fixing visual layout and structure issues.

Watching accessibility drive the evolution of the page templates has been interesting. Most decisions have follow a rapid, iterative development cycle. I will work through a problem, sketch it out, run it past Charlie for feedback and implement it. I'll test it for

accessibility, which is mostly seamless since it has been in mind since the design stages. If I get stuck, Charlie helps me work through it.



One problem in particular I've been tweaking, is how the site responds to the myriad of screen sizes: 13" screen, 27-inch monitor, 4 inch phone, 3.5 inch phone, 15" screen, tablet landscape, tablet portrait. I've been making sure it all scales appropriately.

As a designer, it's easy to get into the mindset that everyone spends their day looking at websites on big, beautiful Cinema Displays. To avoid this, I try to rotate the device—even if it means using a simulator—I'm working on every so often.

WEEK FOURTEEN

This week I thought it'd be interesting to share a different perspective on the project. The guest post is written by my supervisor Charlie, who has been a driving force behind NewsA11y.

The tangential benefits of a GRA in a non-research office

By Charlie Triplett

In the same way that faculty conduct research to keep their skills and knowledge at the cutting edge, some professional office staff can do the same by allowing GRA students to perform experimental work in the office.

I think this is especially true in any office that develops creative products, like MU Web Communications.

Having a GRA conducting a professional project in a technical office like Web Communications (or in our previous roles in Engineering) keeps the staff skill set from

stagnating. I've seen this in my own work supporting Emily's project. Quite frankly, for most academic websites, the designer has to invent a reason to do something new. It is generally not an environment where client needs push the envelope of what's possible.

This is due to the fact that supporting a GRA conducting an experimental project raises questions that may or may not have ready-made answers. In developing *NewsA11y* using Wordpress as a framework, a number of new solutions were developed that will have direct application to many new sites that are built at the University of Missouri.

Examples

First and foremost, I became an accessibility (a11y) advocate, introducing rudimentary accessible features into the College of Engineering website before Section 508 even became an official campus policy. I'm now incorporating more a11y features like ARIA roles and new methods of navigation for keyboard-only users.

Ideas Emily developed, like accessible-first design (as a pre-cursor to mobile-first design), now form the basis for my current work at MU. I have seen that the accessibility-first approach works, and deeply influenced the design and layout of a soon-to-be launched LifeSciencesWeek.Missouri.edu. Focusing on accessibility (not just simplicity for its own sake) leads to a better design.

Her work also gave me pause to evaluate many of the "normal" processes you'd expect a user to go through to edit and publish content. We began to find that the use of a bloated back-end technical administration area is not required for users to publish and update content. This is important to my work because one of the most difficult aspects

of developing a website is training and encouraging (often cajoling) the site owner to update its content. If there can be fewer barriers to maintaining site content (quick access, simpler editors), that leads to a better experience all around. For the site owner, they're not overwhelmed by maintenance tasks. The user benefits from correct information. Meanwhile, our office's reputation as a web design solution provider is enriched.

Emily's project has also pushed Wordpress as a framework to its limits, requiring unconventional uses of form elements inline with the site. This has lead to a new way for our staff to collaborate in the development of new websites. I hope to have a case study on automated agile collaboration using *Wordpress* and *Basecamp* in the late spring of 2014.

And lastly, because Emily demanded a certain perfection in the grid framework used to structure *NewsA11y*, I found a reason to learn a new CSS compiling language (SASS) which I used to develop/fork what I believe to be one of the most functional responsive grid systems on the web. I'm proud of my child and have open-sourced it here: https://github.com/charlietriplett/nested-responsive-grid

Ultimately, for me personally, I re-learned something I figured out in College. As a designer, at my core, I'm a tool-builder. I build instruments that help others accomplish tasks, and I feel like I'm at my best when they tools I develop make life better for someone.

Self-Evaluation

For the past six months, I have poured my soul into my professional project, *NewsA11y.* During this time, I have gained a deeper level of competency as a designer, illustrator and front-end developer.

I have come to understand that selling accessibility requires more than energy and passion. It requires an understanding of policy, politics and liabilities. I have learned to advocate for greater accessibility with a much more open and forgiving mindset. Despite our best intentions to create a welcoming environment, those of us in the accessibility community often come across as self-righteous.

NewsA11y has taught me that accommodating for disabilities is always ongoing, and we should aim for constant improvement. Although concrete barriers exist, I have learned that there are also putty-like barriers that yield to flexible solutions. I have learned that the industry experts do not always have the answers.

These humbling reminders have allowed me to open my heart and mind to truly listen to what the user needs to consume content. Consequently, it has made *NewsA11y* more approachable, which is hopefully reflected in the execution of the Web app.

Making Accessibility Approachable

NewsA11y has forced me to focus on humanizing the concept of accessibility. It pushes past regurgitating insurmountable "best practices" checklists and creates an environment where heartfelt and thoughtful dialogue can flourish. It defies the industry misconception that accessibility is hard and cumbersome.

When most people try to learn more about accessibility, they stumble upon the World Wide Web Consortium (W3C). The W3C's website can be incredibly overwhelming and intimidating to the accessibility newcomer because of its dense information and verbose, technical language. The W3C's Accessibility Standards,

called "Web Content Accessibility Guidelines 2.0" (WCAG 2.0), alone total around 700 printed pages. A developer might start out with the best intentions to implement accessibility per the WCAG 2.0, but eventually hits a roadblock and surrenders.

Despite the shortcomings of the WCAG 2.0, they are a solid starting point because creating my own accessibility standards would only fragment and slow down progress. *NewsA11y* supports the WCAG 2.0 and incorporates it into the information architecture of the site. With the help of Luke McGrath's book, *How to meet the Web Content Accessibility Guidelines 2.0*, I broke each guideline standard into categories and subcategories. I interpreted the original definitions to the best of my ability and wrote plain-language versions.

For every category, I designed an accompanying icon to help visually illustrate its meaning. I considered every aspect of *NewsA11y* as an opportunity to demonstrate the creativity that an accessible-first mindset fosters. I pushed myself to create artwork that was as non-representational as possible, because I want *NewsA11y* to set a stage for reevaluating what we traditionally associate with the term "disability." For instance, the word itself might trigger mental pictures of someone in a wheelchair despite the myriad of disabilities types. Because many of the categories are incredibly abstract and complex ideas, this was an opportunity to challenge myself as a designer and push myself beyond my first few ideas.

Project Ideals

From the project's conception, I have endeavored to minimize focus on publicly shaming news organizations and maximize dialogue about potential solutions. Every design decision has been carefully considered to cultivate a community where each contributor feels valued and respected.

One interesting challenge was ensuring I did not separate people with disabilities from makers of the Web. Contributors for barriers and contributors for solutions are not mutually exclusive groups. A person with a disability could also be a Web developer, or a person with a disability could stumble across a beautifully executed solution elsewhere on the Web and want to share it. The language of the site is intentionally inclusive, easy to understand and approachable. *NewsA11y* cuts straight to the substance by highlighting human dialogue. Less emphasis is placed on whether the person is a developer or designer to avoid creating silos of qualified and unqualified contributors.

Not only does the Web application increase accessibility awareness by welcoming newcomers, it provides a place for accessibility evangelists to gain support.

Storytelling as Core Functionality

Prior to *NewsA11y*, I would become infuriated while consuming news online, having no outlet or structured way to record my experiences. Once the submission component was semi-functional on *NewsA11y*, I began to use the platform to voice these barriers-to-access as I experienced them. Using the prototype while it was being built taught me invaluable lessons; it provided a magnifying glass to both the flawed and delightful. I noticed what needed to be improved or refined and what exceeded my expectations.

At the core of *NewsA11y* are the forms for "Submit a Solution" and "Submit a Barrier." Forms are notoriously challenging for a multitude of reasons. Technical difficulties are to be expected, but other challenges involving language and timing, I had to learn.

First, there is the technical aspect of making the design function on different browsers and operating systems. Parallel to that is creating an experience that does not

rely on a single signifier—such as the color red to indicate a required field—so that it is usable by those who rely on accommodations.

I learned new ways that clear language and time are critically important to creating an accessible form. Visual relationships that give form fields meaning are lost on a screen reader. For example, contextual copy that follows a form field—such as a Madlibs-style fill-in-the-blank—loses all utility when using a screen reader because time is now a variable in using the form.

Additionally, I believe forms to be the pinnacle of user-centered design, because they must be not only functional, but also motivating. They ask for the most intimate information and deliver very little reward. Because *NewsA11y* is dependent on crowdsourced content, I had to have a clear understanding of a different kind of barrier: motivation for posting.

I quickly realized an empty textarea demanding the user to "describe the barrier" or "describe the solution" would yield terrible results, if any results at all. A blank canvas can be paralyzing to those who fear criticism. The perfectionist will procrastinate posting because he or she does not want to unveil vulnerabilities to a community that can be vicious in delivering feedback.

Furthermore, not giving the user clear instructions for what to enter in a field would likely create content that is impossible to structure and reuse, better defined by Karen McGrane in her book *Content Strategy for Mobile* as "content blobs." It is not hard to imagine how a rambling barrier post could set a negative tone for the site. Developers and designers should not be forced to sift through an unwieldy post to find the root of the problem.

On the other hand, I knew the submission could not be formulaic, because the point is to humanize accessibility. Rarely is anything in accessible design a binary choice, and the execution should not be a one-size-fits-all approach.

Considering the options, I arrived at using an assisted storytelling format: a hybrid between a Madlib-style form and a storybook template. Giving the user a framework for telling their story reduces the barriers to publishing while giving the benefit of breaking posts into a database of metadata. Essentially, in addition to reducing technical barriers of creating posts, *NewsA11y* reduces psychological barriers as well.

Although I am definitely not the first to attempt this kind of approach, I have yet to find an execution as accessible as *NewsA11y*.

On both the solution and barrier forms, I have provided a template for posting that gently guides the user through the submission process. It is a careful balance between options and text inputs that, once the information is entered, reads like a storybook. By using a template for posting, *NewsA11y* creates a safety net from the "fear of the expert" mentality.

The storytelling format also helps users eloquently describe the problem, which ensures that content is easier to consume. Providing certain details—such as the device they were using when the barrier occurred—can tremendously help the developer target the problem.

Users can upload screenshots which, to avoid publicly shaming organizations, are only visible to users who are logged in. To ensure that users are not censored, an "additional comments" input is available at the end of the form.

It would be both naïve and short-sighted if *NewsA11y* did not separate the aggregated content as metadata. This allows flexibility in the presentation of the content and allows me to reuse bits wherever I can. For instance, if I ever wanted the

functionality to filter by barrier severity, it is simply a matter of querying that metadata information.

Testing for Accessibility

Before I got too far along, my mentor Charlie and I wanted to make sure the storytelling format would be accessible to users who had vision impairments. We decided to test a rough, first draft form with Julie, a woman who is blind.

Watching Julie's reaction was incredibly rewarding because it validated the exact reason for *NewsA11y's* existence. Often, designers and developers will try to test the polished version of a site, only to realize that it is has major accessibility issues.

Because we were testing the preliminary version, she did not have to fear picking it apart. We were able to rapidly iterate ideas while testing for accessibility. By the end of the session, she told us it was "actually fun to use."

Work Product

Traditional Web development follows a waterfall approach: successive sketches, mockups, html layout and design. The finalized design is given to the developers to implement. After development is complete, the site is ready to launch. However, this pattern doesn't allow for testing of the product until the majority of the work has already been invested.

In my project proposal, I stated that I would only create HTML views of the prototype Web application. After sketching and establishing workflows for the application, I reevaluated my initial approach. The process of creating HTML mockups of views without functionality felt like a dead end for conveying the idea. This pushed me to build the *NewsA11y* prototype using Wordpress. Not only am I familiar with it, it is a flexible and widespread open-source publishing platform.

The core functionality of WordPress provided the publishing framework for posts. Upon that base, I created an original theme with custom functionality and plugins to provide the additional features required for *NewsA11y*.

NewsA11y is a working prototype that addresses a need that is not being fulfilled elsewhere on the Web. It is currently in the alpha phase, which exceeds the expectations of my project proposal.

Professional Growth

In many ways, the scale of this prototype has been larger and more complex than any other project I have worked on, including engineering.missouri.edu. This has led to greater PHP dexterity and made me more comfortable in digging into code and moving things around.

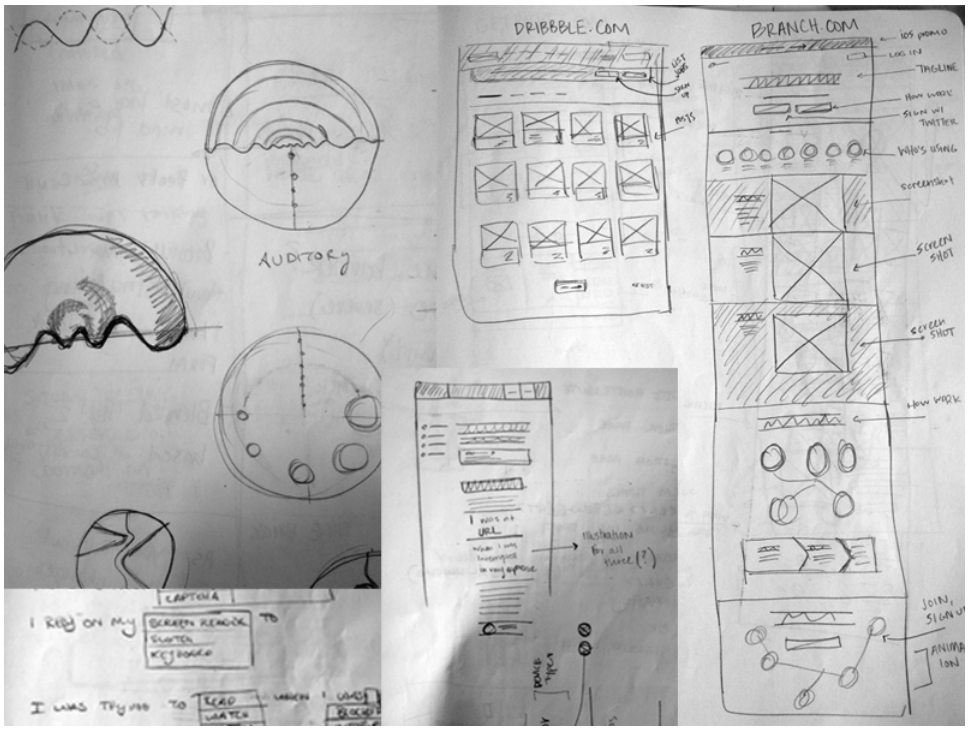
As the project developed, more complex page template queries were required. I have had to learn to write conditional if/then statements, while/foreach loops and counting functions. I also developed a greater understanding of systems-level design through executing illustrations and identity assets. I was able to refine my process due to the invaluable feedback I received in my work environment at Web Communications.

Ultimately, my work with *NewsA11y* has greatly increased my confidence as a designer. In order to conceive, plan, design and develop the project, I had to prove my competence in Web application development from beginning to end. This development process seems deceivingly straightforward on paper, but I found that great work is iterative. At times, I found myself back at the start after rapidly testing an idea. However, ruling out the failed ideas allowed me to be confident in the successful ones. Through this growth, I feel ready to leave the sheltered environment and focus on taking *NewsA11y* to the next stage.

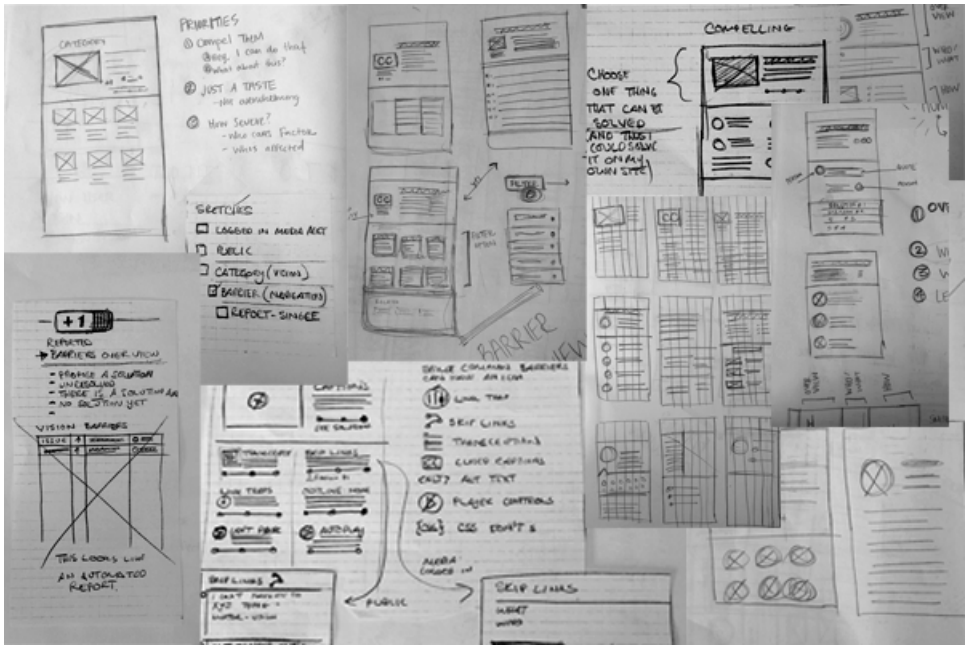
Physical Body of Work

This section contains screenshots of some of the process, execution and discussion that went into creating *NewsA11y.org*. For a better understanding of the project, please visit the aforementioned URL.

Sketches, Wireframes and Mockups

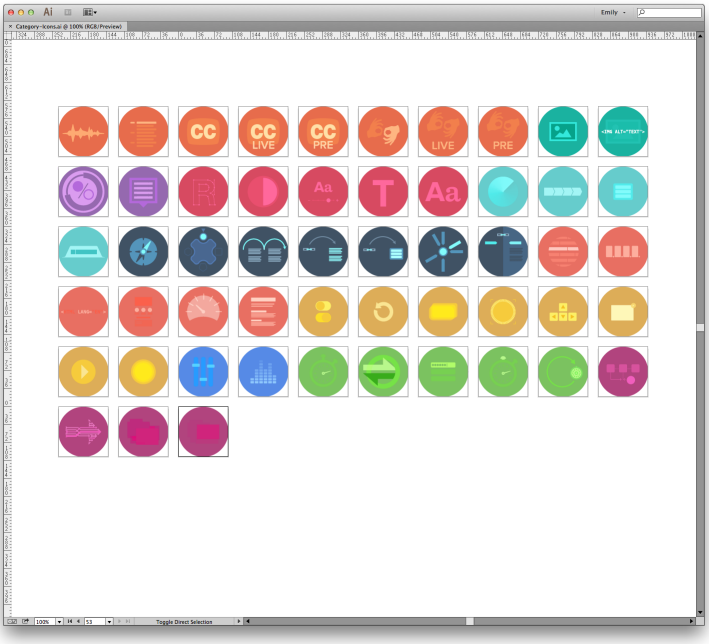


Icon sketches, form submission and homepage ideation

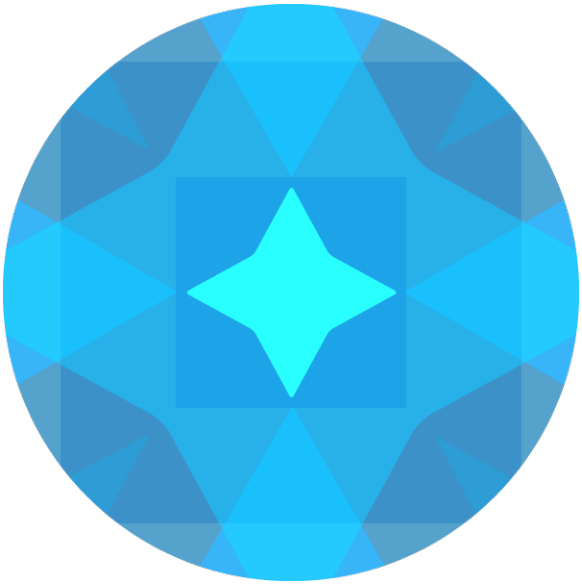


Information architecture

Illustration and Identity

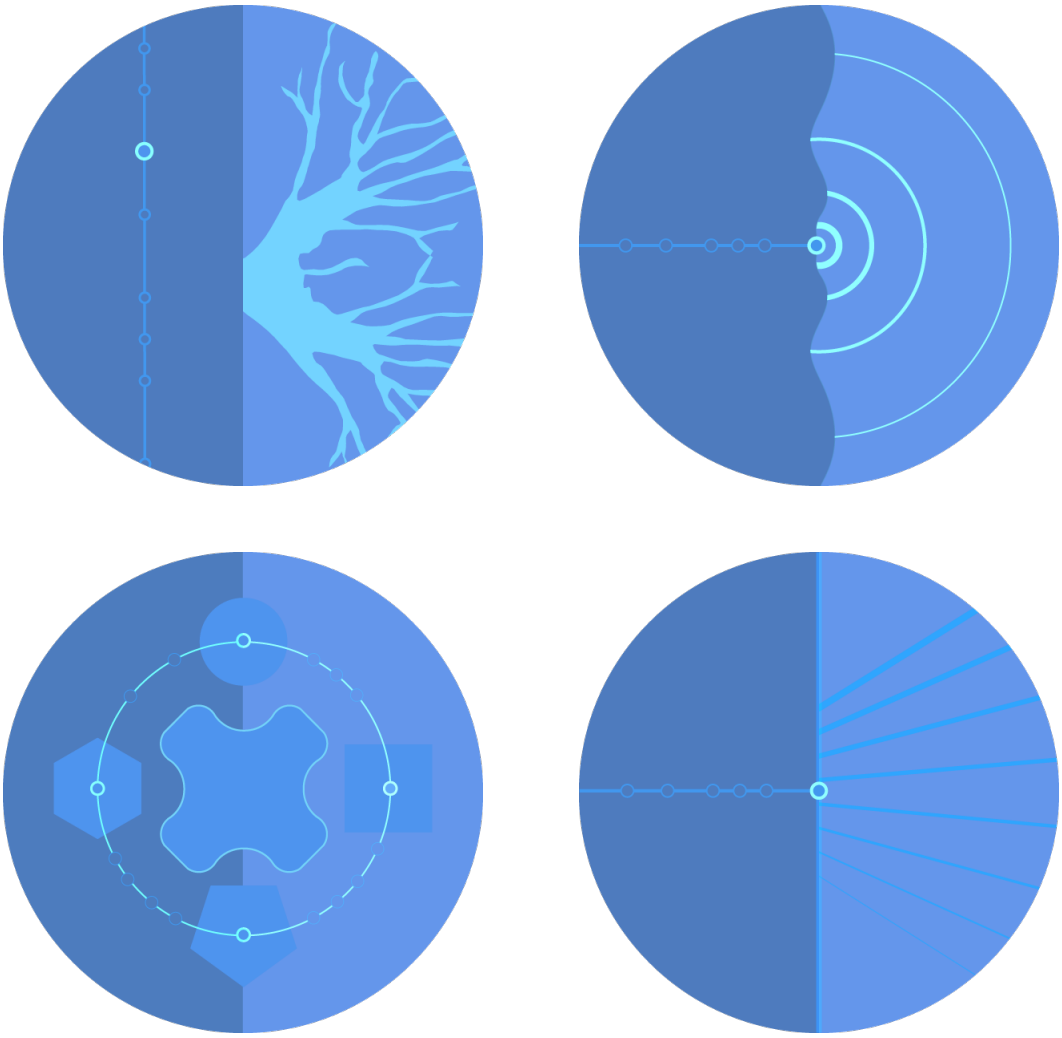


57 icons to help visualize the WCAG 2.0 categories



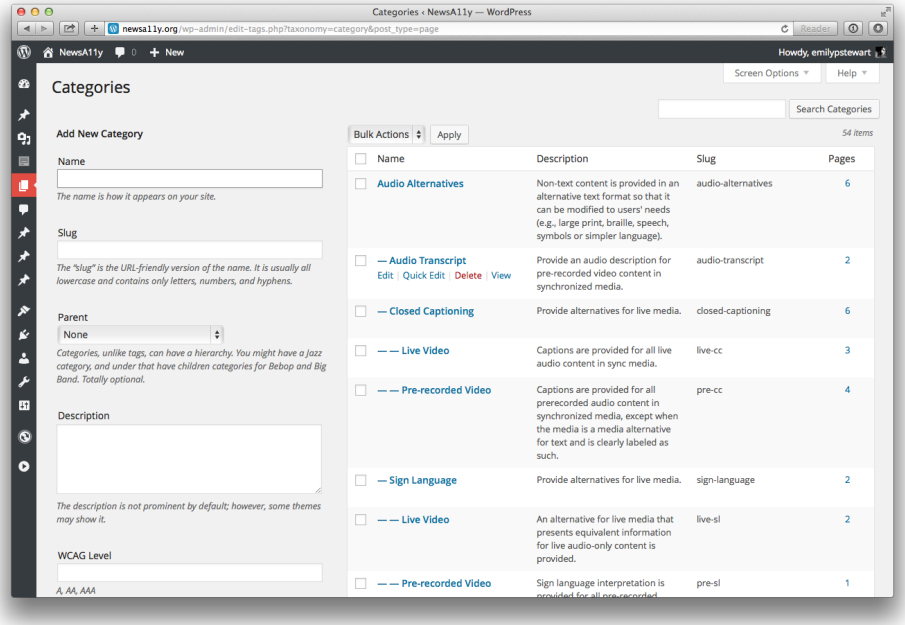
Homepage illustration for "accessibility-first mindset"

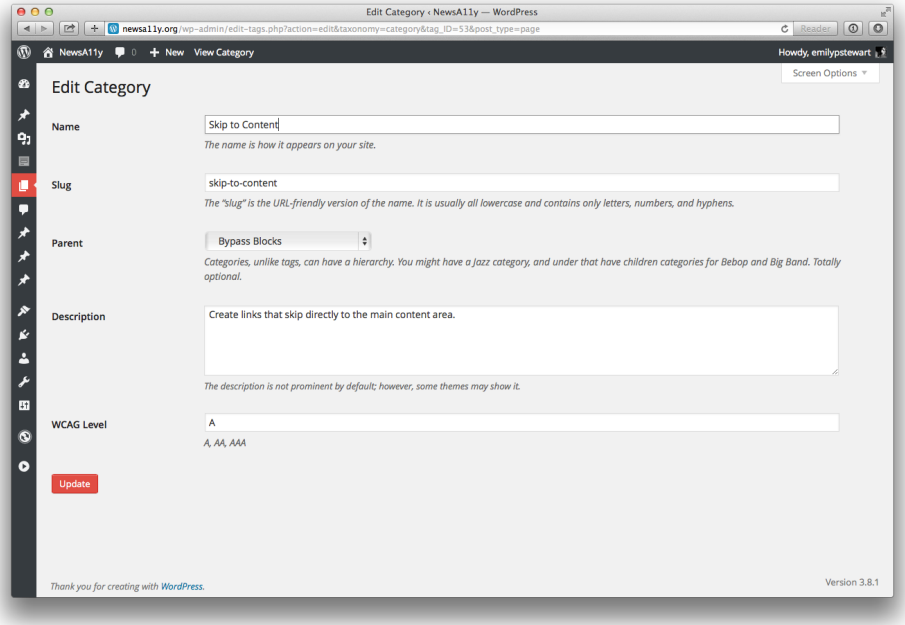
Disability Type Icons



Clockwise: Cognitive, Hearing, Vision and Motor. All four icons build on the concept of transmitting the digital stream of information.

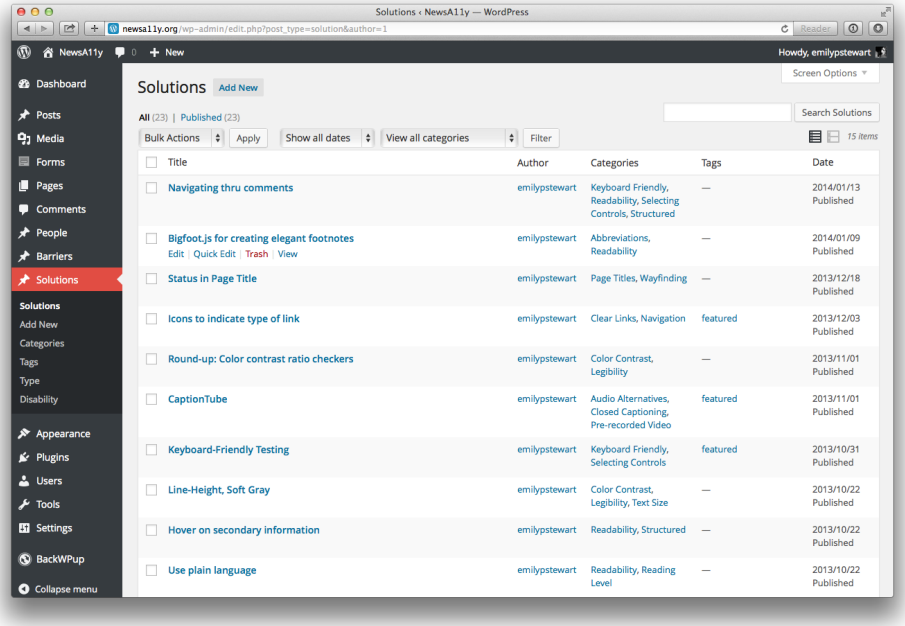
Taxonomies, Categories and Post Types



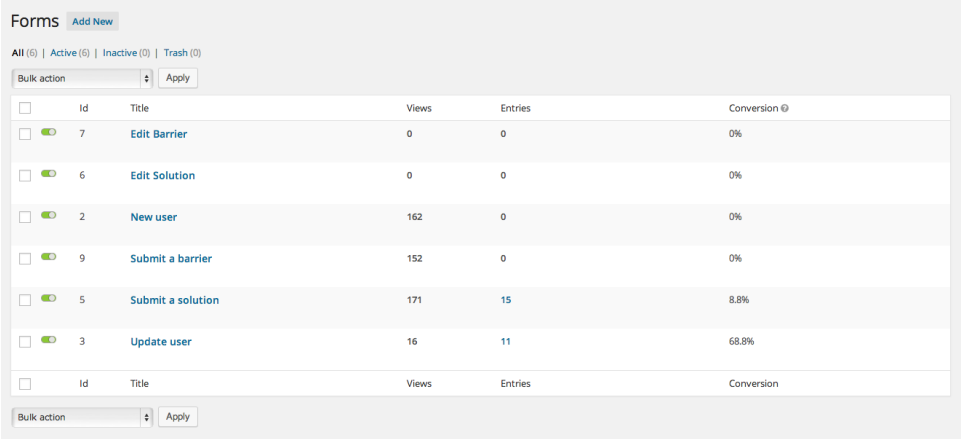


I arranged the WCAG 2.0 into 57 categories (three levels of hierarchy) to make the information consumable to the user. Each category description was rewritten in plain language and given a WCAG level (if applicable).

Custom Post Types and Forms

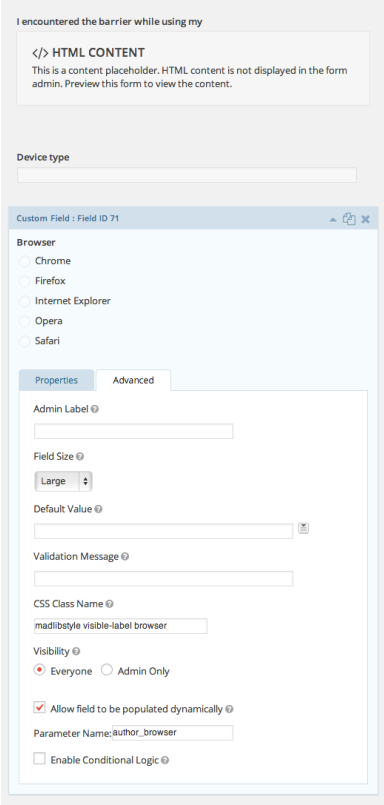


When the user submits a barrier or solution, NewsA11y breaks the information into a custom post type: solution or barrier.

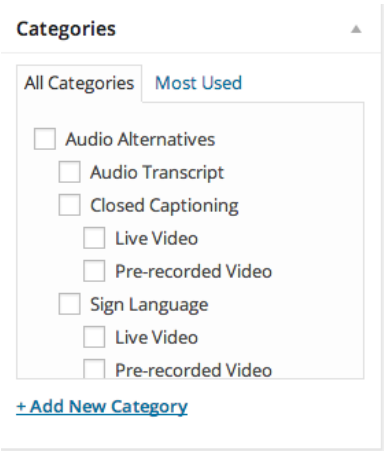


NewsA11y has a total of six forms. They were built using the Gravity Forms plugin and customized to allow updating and special post types.

Custom Post Types, Forms and Metadata

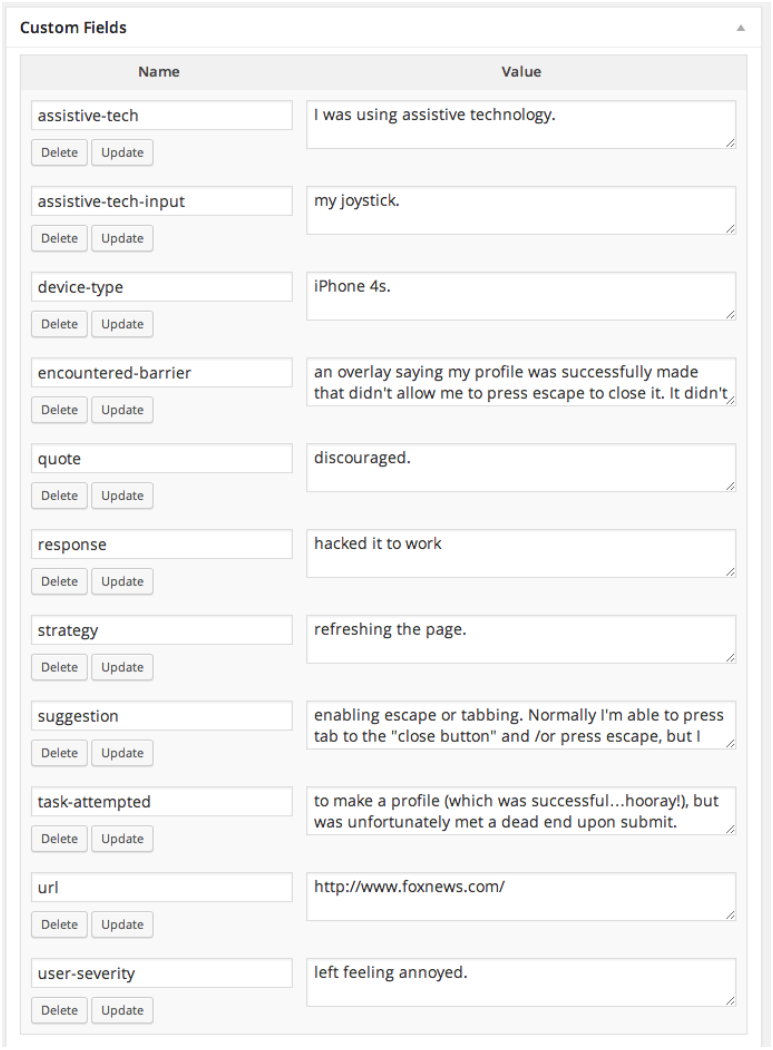


Pre-populated custom variables based on what the user's preferences are in their profile. This makes it even easier for them to submit content, because it is one less thing they need to input.



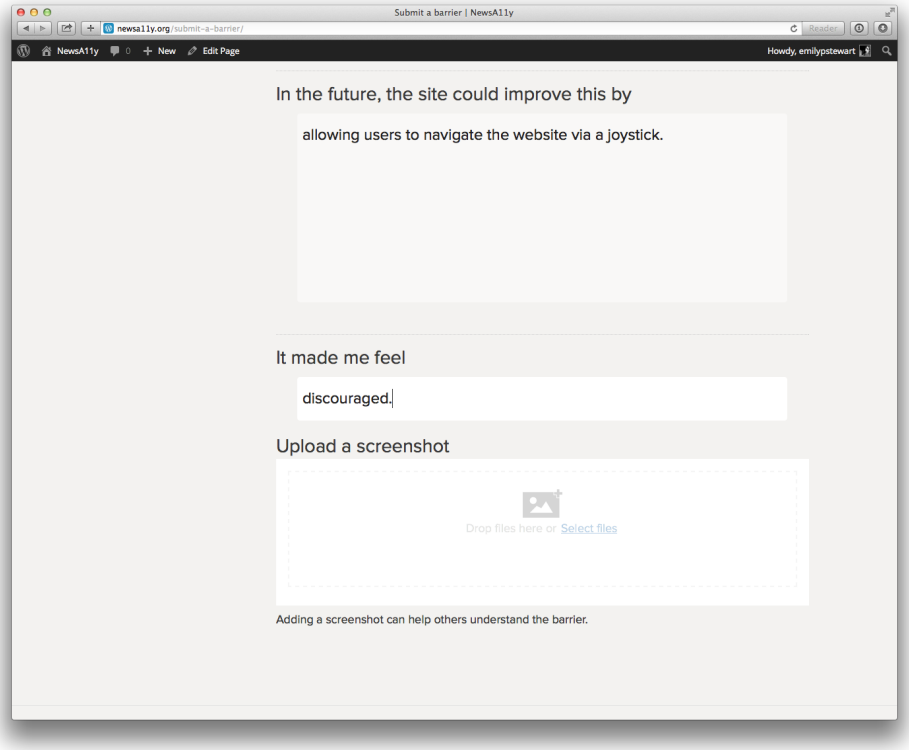
Custom functionality was built so that it maintains category hierarchy instead of using the WordPress default behavior of arranging selected categories at the top.

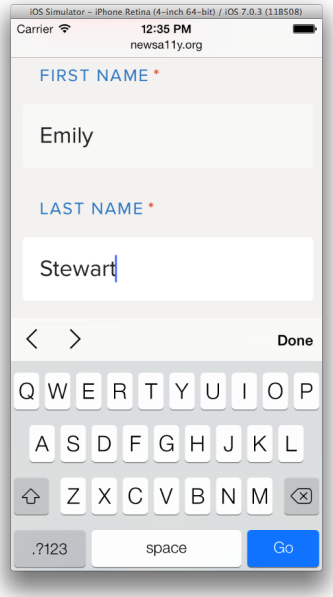
Custom Post Types, Forms and Metadata



The information that the user inputs is separated into metadata. This allows me to query specific parts of the content, making it reusable on a myriad of platforms.

Forms and User Experience

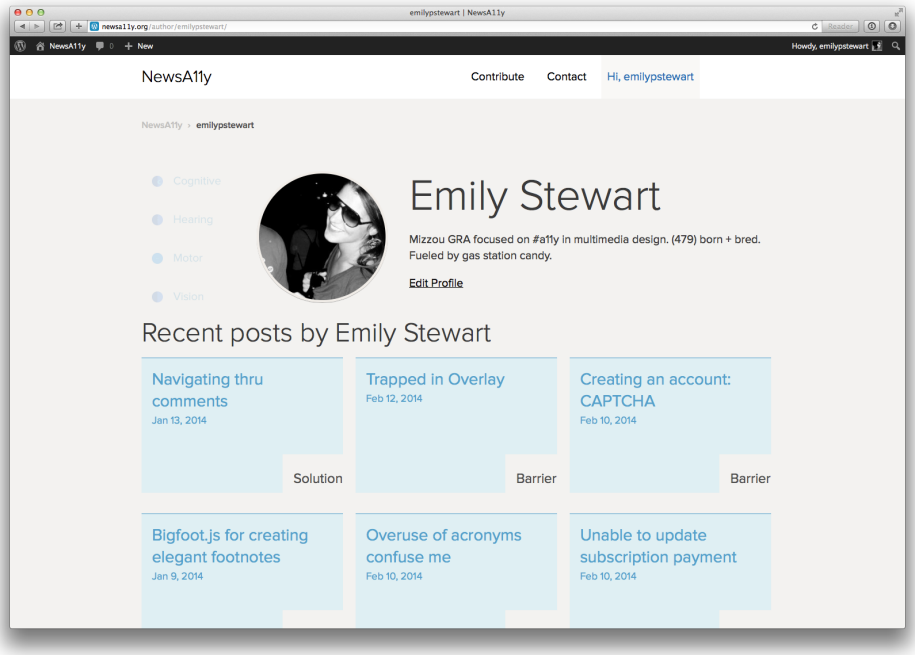


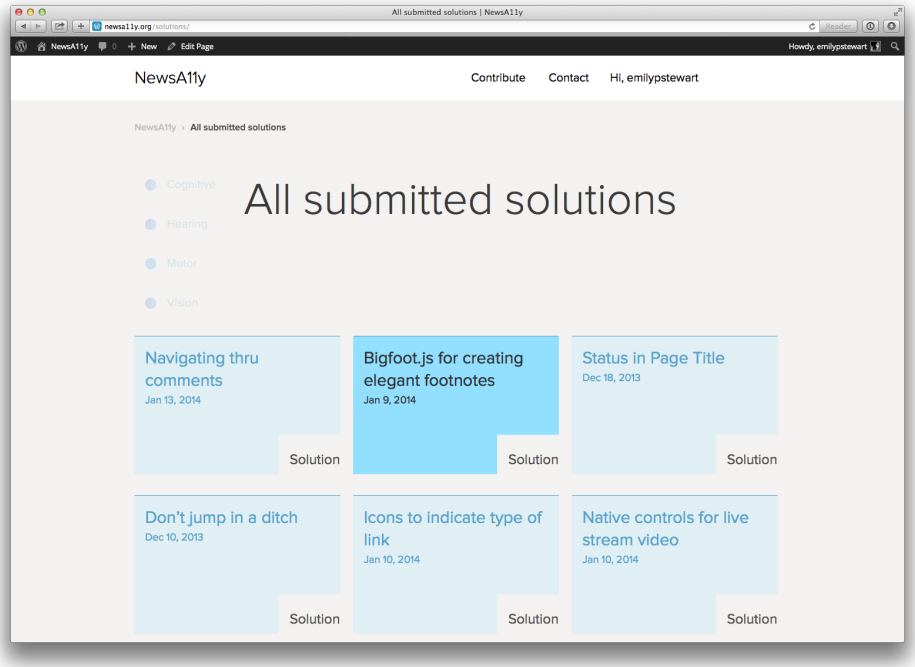


NewsA11y uses a storytelling approach that gently guides the user through the submission process. It is a careful balance between options and text inputs that, once the information is entered, reads like a storybook.

By using a template for posting, NewsA11y creates a safety net from the "fear of the expert" mentality.

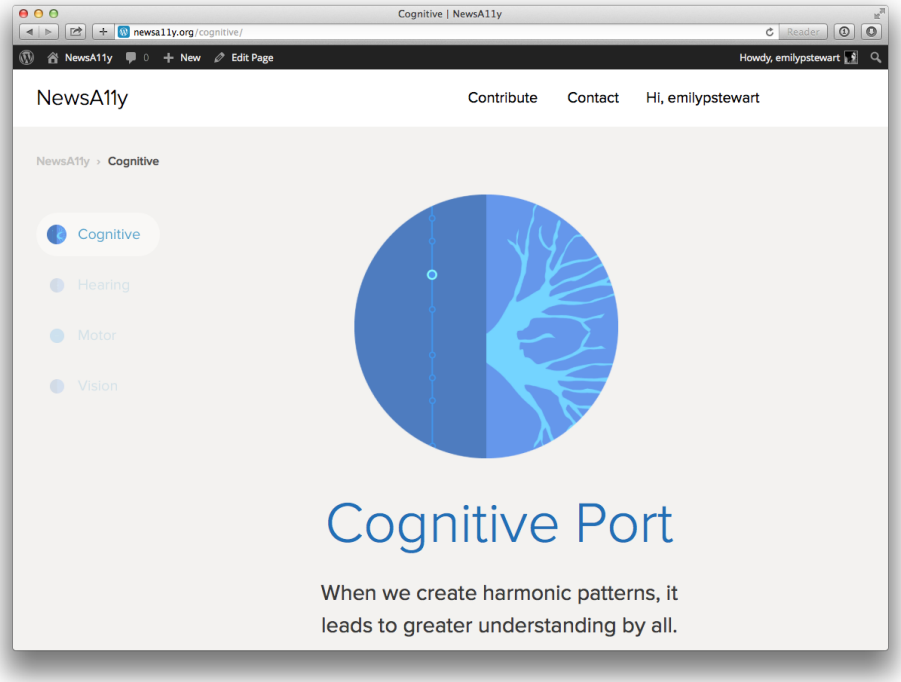
User-Centered Design

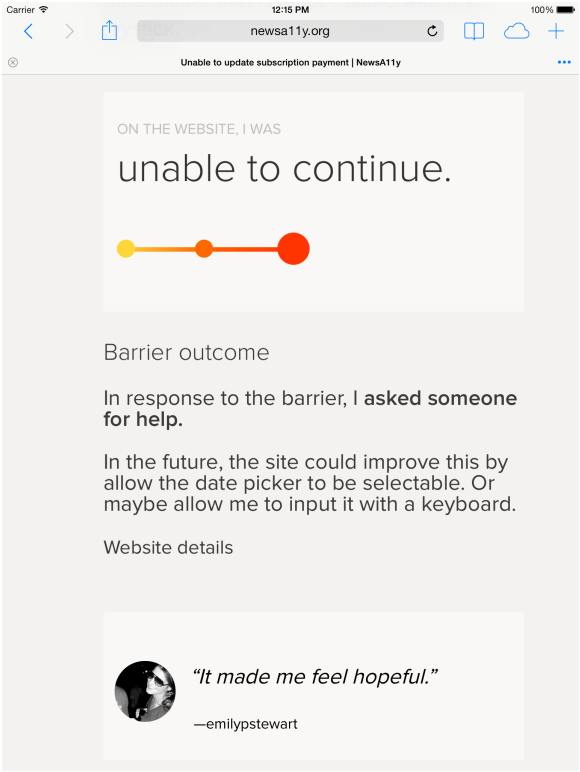




Each author is given their own page on the site to convey that their thoughts are valued. Users can browse by a different categories or post types.

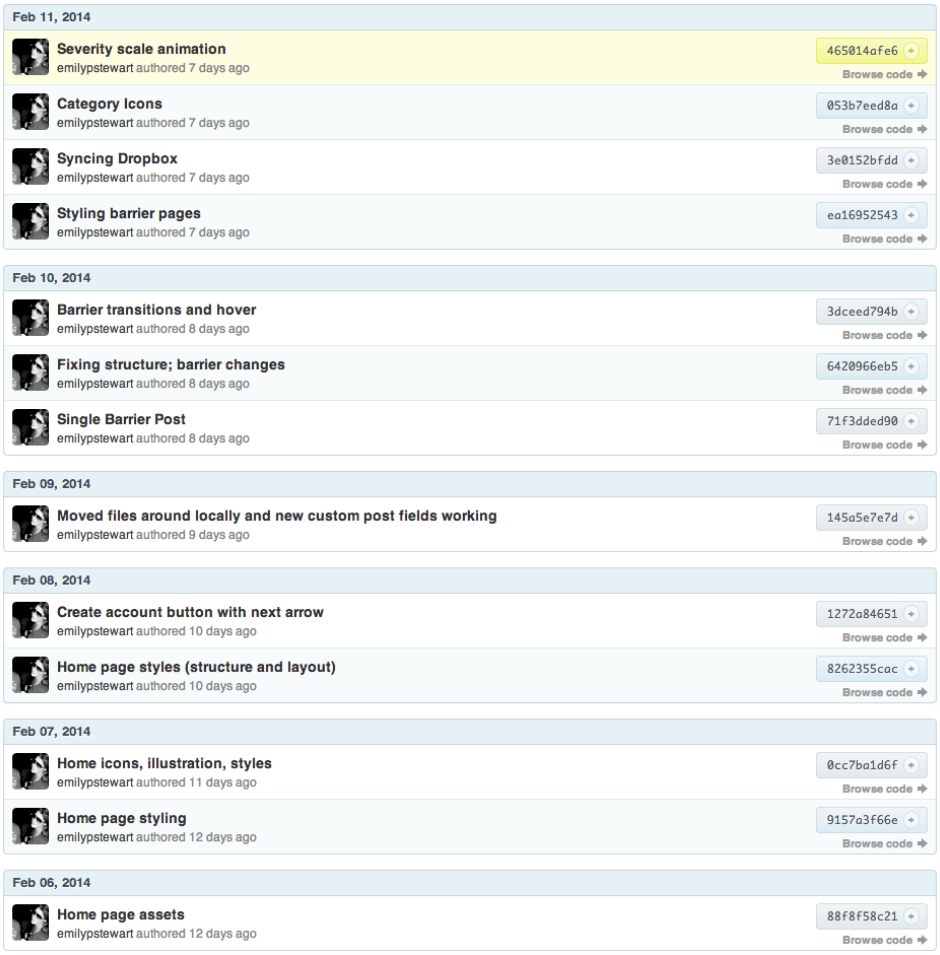
Responsive Web Design





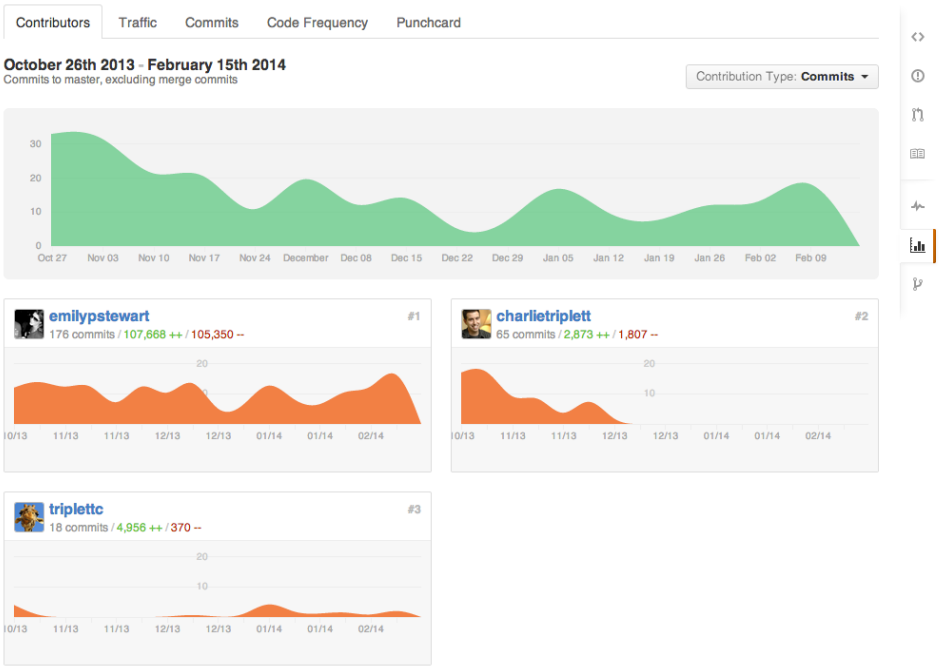
NewsA11y uses a device-agnostic approach to design. This ensures the experience is enjoyable no matter the device it is being consumed on.

Development Process



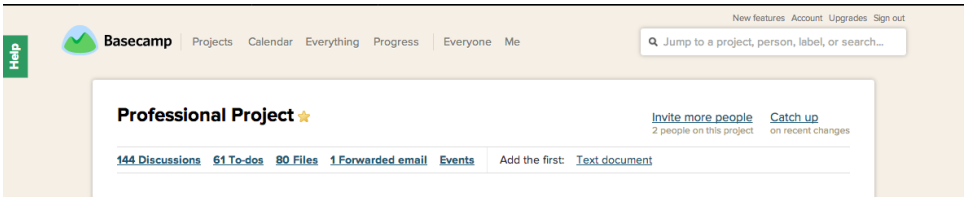
We used a private repository on GitHub for version control.

Development Process



A visualization of the code that was written for NewsA11y during the project timeline. I had a total of 176 commits, 107,688 additions (lines of code added) and 105,350 deletions (lines of code deleted).

Project Communication



I used my personal Basecamp and Dropbox account to keep my ideas, files, to-dos and other assets in one place. During the project timeline, there were a total of 144 discussions, 184 completed to-dos across 28 to-do lists, 80 files and 1 forwarded email.

Basecamp was a great tool for remote feedback on my design decisions.

Analysis

Rethinking access to address the digital divide in news

With the proliferation of digital consumption, the journalism industry is faced with evaluating its effectiveness in fulfilling its role in society. Building upon the libertarian theory of the press, the primary role of the mass media in the United States is to ensure that every citizen has an equal right to the access of information.[1] Any restriction to equal access to news fails to provide a diverse, open marketplace of ideas and therefore limits rights:

> In order for truth to emerge, all ideas must get a fair hearing; there must be a "free market place" of ideas and information. Minorities as well as majorities, the weak as well as the strong, must have access to the press. This is the theory of the press which was written into our Bill of Rights (Siebert, Peterson, & Schramm, 1963, p. 4).

Although the authors were describing the roots of the libertarian theory, it is still applicable to the definition of journalism today. Expanding on this definition, others have stated that the journalism institution exists to protect liberty by providing all citizens with knowledge and a platform for public discourse.[2] If minorities no longer have access to the press, it is no longer true that all ideas are getting a fair hearing.

Digital divide in an evolving media landscape

After 80 years of producing a weekly print magazine, *Newsweek* announced in October 2012, that it would end its print publication and shift to a digital-only version. The death of a publication has been a recurring theme in the print industry, as online news services have become the primary vehicle for news consumption.[3]

These drastic transformations are a compelling motivation for the mass media industry to reevaluate access to news. Research suggests that a lack of access to information has societal consequences and creates a digital divide in social equality.[4]

However, traditional parameters for study of the digital divide have been based off of the location of consumption or connection speed—typically whether users have broadband Internet at home. Horrigan (2009) states that with the increase of internet-enabled mobile devices, "having broadband at home is no longer inevitably associated with elite status for a tech user."[5] Furthermore, increased mobile Internet access has

dissolved barriers-to-access for certain consumers.[6] But simply gauging access to information based on these traditional factors does not encompass all aspects of the digital divide. Even though one aspect of it has been erased, design-induced barriers are creating another digital divide in access to content.

Right to communicate

United Nations official, Frank La Rue, argues that universal access to the Internet should be a priority because it has become a pathway for understanding and addressing inequality.[7] Expanding on La Rue's belief, Mathiesen (2012) defends the philosophical case that access to the Internet should be a considered a human right:

> While access to the Internet is not a "primary" right, it can be derived from the primary right to communicate. Furthermore, since the right to communicate is a linchpin right that empowers people to exercise their rights and fulfill their responsibilities, states have an obligation to see to it that people have access to Internet technology (p. 20).[8]

According to the aforementioned sources and theories, online news services should be ensuring that they are providing equal access to consumption.

Disabled people are second-class citizens in news

While an increasing number of news platforms are adapting their designs for cross-platform delivery, technology is simultaneously making it possible for users with disabilities to access a myriad of content. Screen readers make it possible to connect users with vision impairments to the rest of the digital world—reaching an ecosystem of users unavailable to the print medium. Despite the opportunity provided by technological advancements, many users are still being denied their constitutional right to news everyday because of poor design.

Findings have suggested that people with disabilities often experience barriers-to-access while browsing websites. For example, a study revealed that some visually impaired users copy and paste text from websites into word processors if a website is too confusing or if the navigation is frustrating.[9]

Barrier-free design, also known as accessibility, is design that is accommodating and usable by all people involved and doesn't create setbacks or obstacles for users. In

2002, a study found that of 69 online news sites, only 3% of them had fully accessible homepages. Although this increased to 7% a year later, it is still concerning because a homepage is "the gatekeeper to the rest of the site."[10]

For the past year, I have studied and evaluated the overall accessibility of five major U.S. news websites—appalled by the easy-to-fix barriers that were rampant on all of them. The five websites evaluated were *CNN* (CNN.com), *Fox News* (FOXNews.com), *NBC News* (NBCNews.com), *New York Times* (NYTimes.com) and *USA Today* (USAToday.com). The criteria for analysis was a combination of the Web Content Accessibility Guidelines (WCAG) 2.0,[11] *Accessibility 2.0* guidelines, two automated accessibility audit tools and human judgment. As of March 2014, all five fail to meet several low-hanging fruit accommodations, such as meaningful alternative text. This is the text that screen readers use to describe images—an accommodation relied on by many visually impaired users. All five sites also fail to provide a transcript for videos.

Although *CNN* allows customized captioning, it is not keyboard friendly for users with motor disabilities. With small text and no option to resize it, *FOX News* fails users with vision impairments. However, like *CNN*, it does provide closed captioning. Despite having the tools in place to implement basic photo and video accommodations, *NBC News* has minimal accessibility for users with auditory, motor and vision disabilities. However, the website excels at the user sign up process. The least accessible of the five websites is *USA Today*, which traps keyboard-only users if the user encounters an advertisement overlay.

It is important to note that the *New York Times* website has had the greatest improvement in overall accessibility from the beginning of this evaluation to its recent redesign. The website is the only one of the aforementioned five that implements ARIA roles and bypass blocks. If the site implements alternative text and closed captioning, it will meet many of the intermediate level accommodations.

Assistive technology has advanced to the point where the journalism industry's implementation has become the barrier to consumption. For example, Apple's iOS devices have a built-in screen reader and *AssistiveTouch* for those who rely on motor accommodations. Despite other disciplines embracing accessibility for years, little to no discourse in the news industry exists.

Since nearly one in five people have a disability in the United States,[12] this presents a grave ethical dilemma. Building upon the libertarian theory, this failure to provide equal

access to news and not meeting the needs of our citizens suggests that journalists are not fulfilling their primary role in society.

Limits of standardization

Perhaps the media industry is not to blame for the oversight of accessibility compliance. The Web community has yet to develop a set of guidelines that designers and developers agree is most suitable. In 1997, the World Wide Web Consortium (W3C) created the Web Accessibility Initiative (WAI) to advocate accessibility and establish guidelines: the aforementioned WCAG 2.0. However, their focus is fraught with verbose technicalities and 17 years later, little progress has been made.

Cognitive disabilities, such as dyslexia, are barely mentioned in these guidelines and are given low-level priority for meeting accessibility compliance. According to Friedman & Bryen (2007), this exclusion is severe because cognitive disabilities affect more than 22 million Americans. In their design recommendations for users with cognitive disabilities they state, "The potential power of the Web is its universality and it being available to everyone."[13]

Frustrated with the direction of the WCAG 2.0, Kelly et al (2009) began to create their own guidelines, which they coined *Accessibility 2.0*. Their research includes case studies of practical implementation, which could be adapted and improvised for media outlet websites. The authors argue that accessibility should be a user-focused approach that is always in beta and should not be executed with a one-size-fits-all mentality.[14]

Their approach to accessibility combines three qualities of what websites should be striving to achieve: flexibility for future technology, contextualization of consumption and user-centered design. Human-centered design expert Don Norman describes the philosophy of user-centered design as focusing on the needs of the consumer, resulting in an easy-to-understand and usable product.[15]

This article builds on this concept and argues that understanding and designing for the context of consumption will lead to better user-centered design resulting in greater Web accessibility for everyone.

Mobile consumption behavior

In the context of mobile Internet usage, the perception that mobile device users only desire abridged versions of content is no longer valid. Survey research has shown that the majority of smartphone users are not consuming online content "on-the-go;" rather many are browsing leisurely from their home.[16]

In a 2011 survey, 79% of smartphone owners reported using their phones for instant information seeking purposes within the past 30 days. Of those same smartphone owners, 72% reported using their phones as entertainment or because they were bored. One in five reported using their phone to avoid interacting with people around them by pretending to be busy.[17] Media consumers are using their devices for a range of reasons, not just for instantaneous information.

Even though Internet-enabled devices have become more ubiquitous, the goal-oriented behavior of the audience remains the same. A common misconception in cross-platform content delivery is that non-desktop users prefer a simplified, bare bones version of a site. According to content strategist Karen McGrane, this is vastly untrue relative to content, because people are willing to do complex tasks on their mobile device.[18] Users do not want to be deprived of content just because they are browsing on a smartphone.

At face value, this data illustrates the importance of access to content via mobile devices. Beyond that, research suggests there is a parallel between the experience of mobile users and users with disabilities.

Mobile consumption yields situationally induced impairments

Research suggest that there is a strong relationship between mobile and accessible Web design, particularly when comparing physical usability.[19] Mobile users often encounter similar barriers-to-access as visually disabled and motor impaired users, but those with the aforementioned disabilities have a higher cognitive awareness of these obstacles. This occurrence is defined as a situationally induced impairment.[20]

Consider the following scenario: a user is browsing a news site on their smartphone. This user encounters similar barriers that visually impaired users experience: The type size is too small and the body text has poor color contrast with the background. An example of this phenomena corresponding to motor impairments is evident when a mobile user is trying to comment on a story online and they are struggling to input their login information because they are typing on a tiny on-screen keyboard. The

mobile user enters the wrong password a few times and is forced to type the picture verification image (CAPTCHA). They might experience the same frustrations that motor impaired users do on a desktop version of the site.

Observing how mobile users interact with their devices in this context could help designers understand how to approach accessibility in various digital platforms. Wroblewski (2011) describes mobile users as:

> people with "one eyeball and one thumb." One thumb because they are likely to be holding their mobile in one hand and using a single thumb to control it; one eyeball because in many locations where mobile devices are used we only have people's partial attention (p. 25).[16]

Essentially, these consumers are voluntarily using devices that simulate situationally induced impairments. Although this describes the experience of mobile users who are filtering an elevated level of stimuli, it could also illustrate the experience of users who have cognitive disabilities. Therefore mobile users present designers with a framework for understanding what can be technically considered extreme use cases.

Fringe cases into mainstream

The history of product development cements the argument that what begins as extreme use can eventually become mainstream. This pattern is prevalent in a variety of industries, such as between the commercial automotive industry and the automotive sport industry. This beneficial outcome of extreme use products is illustrated in commonplace consumer automotive safety features. Disc brakes, roll cages, and rearview mirrors are all features that originated in racing environments.[21]

The extreme use case becoming mainstream is apparent between traditional accessibility accommodations and mobile accommodations. Solutions that worked to increase desktop accessibility are being implemented in mobile technology, such as touch screens and voice recognition. Researchers Harper and Yesilada view designing for Web accessibility as an über use case instead of extreme use case, because it is founded with a user-centered focus that must be flexible to personalization. Therefore, the authors argue that to "understand the needs of disabled users is to understand the needs of everyone."[22] Potentially, solutions for extreme use cases can answers demands that the average user might benefit from and appreciate.

New paradigm: every user is an extreme use case

By approaching design with accessibility as a foundation in all cross-platform contexts the media can fulfill its role in a democratic society. Other industries elsewhere on the Web have recognized the need to embrace accessibility and are implementing solutions that ultimately are benefiting users in all contexts.[16] According to Lidwell, Holden, & Butler (2003), there are four characteristics of accessible designs: perceptibility, operability, simplicity, and forgiveness.[23]

It can be inferred that these four accessible design considerations will benefit all consumers of news, because a consequence of accessible design is lower barriers for everyone. Increasing access to information and public discourse means journalism is becoming more effective at fulfilling its primary role in society.

Solution: accessible-first design

The aforementioned barriers are not unique to the journalism industry and many solutions exist in other fields across the Web. The media no longer has an excuse to dismiss users with disabilities and therefore accessibility should not be an afterthought.

By prioritizing accessibility as the default mindset in the design process, news organizations can create a better user-experience for all media consumers. For example, one of the pivotal Web accessibility principles outlined by Rutter et al (2006) is to fulfill various user needs by designing flexible websites. An added benefit of this flexibility is that it also "increases general usability and lets people without disabilities use websites according to their preferences, such as using whichever browser they want and using keyboard shortcuts."[24]

An adaptable design approach is being applied to solve mobile Web design constraints. The term responsive Web design was coined by Web designer Ethan Marcotte who describes it as a flexible website that adapts relative to the medium in which the user accesses the site.[25] This approach is widely accepted in the Web industry and Walton (2012) advocates the advantages of responsive design stating:

> In the case of [a] news outlet, it would have one version to maintain, one version to budget for and one version of consistent content for users. Thus, when new devices

> hit the market (like seven-inch tablets), it wouldn't have to segment its Web budget again to start from scratch on a whole new experience (p. 92).[26]

Not only does this address flexibility for future technology, but also makes implementation more pragmatic. By borrowing strategies for cross-platform design, the journalism industry can accommodate for these seemingly fringe use cases.

Conclusion

Users with disabilities—either in the traditional sense or situationally induced—are consuming news online. By prioritizing access, the media industry is treating impaired users like second-class citizens. Technology has reached a point at which there is no excuse for giving non-impaired users priority access in news media design. If the media is to fulfill its responsibility in a democratic nation, it must adopt accessibility to ensure an open marketplace of ideas.

[1] Siebert, F., Peterson, T., & Schramm, W. (1963). *Four theories of the press: The authoritarian, libertarian, social responsibility, and Soviet communist concepts of what the press should be and do*. University of Illinois Press.

[2] Rosenstiel, T., & Kovach, B. (2007). *The Elements of Journalism: What Newspeople Should Know and the Public Should Expect, Completely Updated and Revised.* Three Rivers Press.

[3] Siles, I., & Boczkowski, P. J. (2012). Making sense of the newspaper crisis: A critical assessment of existing research and an agenda for future work. *New Media & Society, 14*(8), 1375-1394. doi:10.1177/1461444812455148

[4] Neckerman, K. M. (2004). *Social inequality*. Russell Sage Foundation.

[5] Horrigan, J. (2009). The mobile difference. *Pew Internet & American Life Project*.

[2] Fox, S. (2010). The Power of Mobile. *Pew Internet & American Life Project.*

[7] La Rue, F. (2011). Report of the Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression. *Human Rights Council, 16*.

[8] Mathiesen, K. (2012). The Human Right to Internet Access: A Philosophical Defense. *New ICTs and Social Media: Revolution, Counter-Revolution and Social Change, 18,* 9.

[9] Murphy, E., Kuber, R., McAllister, G., Strain, P., & Yu, W. (2008). An empirical investigation into the difficulties experienced by visually impaired Internet users. *Universal Access in the Information Society, 7*(1), 79-91. doi:10.1007/s10209-007-0098-4

[10] Davis, J. J. (2003). Accessibility Divide: The Visually-Impaired and Access to Online News, The. *J. Broad. & Elec. Media, 47*, 474. doi:10.1207/s15506878jobem4703_9

[11] W3C. (2008). *Web content accessibility guidelines 2.0.* W3C working draft.

[12] U.S. Census Bureau. (2012). *Nearly 1 in 5 People Have a Disability in the U.S., Census Bureau Reports.* Retrieved from http://www.census.gov/newsroom/releases/archives/miscellaneous/cb12-134.html

[13] Friedman, M. G., & Bryen, D. N. (2007). Web accessibility design recommendations for people with cognitive disabilities. *Technology and Disability, 19*(4), 205-212.

[14] Kelly, B., Sloan, D., Brown, S., Seale, J., Lauke, P., Ball, S., & Smith, S. (2009). Accessibility 2.0: next steps for web accessibility. *Journal of Access Services, 6*(1-2), 265-294. doi: 10.1080/15367960802301028

[15] Norman, D. A. (2002). *The design of everyday things*. Basic Books (AZ).

[16] Wroblewski, L. (2011). *Mobile first*. New York, NY: A Book Apart.

[17] Smith, A. (2011). Americans and their cell phones. *Pew Internet & American Life Project, 15*.

[18] McGrane, K. (2013). *Content Strategy for Mobile*. New York, NY: A Book Apart.

[19] Trewin, S. (2006, May). Physical usability and the mobile web. In *Proceedings of the 2006 international cross-disciplinary workshop on Web accessibility (W4A): Building the mobile web: rediscovering accessibility?* (pp. 109-112). ACM. doi: 10.1145/1133219.1133239

[20] Yesilada, Y., Brajnik, G., & Harper, S. (2011). Barriers common to mobile and disabled web users. *Interacting with Computers, 23*(5), 525-542. doi:10.1016/j.intcom.2011.05.005

[21] Deaton, J. (2008). "Top 10 Everyday Car Technologies that Came from Racing" HowStuffWorks.com.

[22] Harper, S., & Yesilada, Y. (2008). *Web accessibility: a foundation for research.* Springer.

[23] Lidwell, W., Holden, K., & Butler, J. (2010). *Universal Principles of Design, Revised and Updated: 125 Ways to Enhance Usability, Influence Perception, Increase Appeal, Make Better Design Decisions, and Teach through Design*. Rockport publishers.

[24] Rutter, R., Lauke, P. H., Waddell, C., Thatcher, J., Henry, S. L., Lawson, B., ... & Urban, M. (2006). *Web accessibility: Web standards and regulatory compliance*. FriendsofED.

[25] Marcotte, E. (2011). *Responsive web design*. New York, NY: A Book Apart.

[26] Walton, T. (2012). *Responsive Design Strategy*. Smashing Magazine.

Professional Project Proposal

Introduction

My passion for greater accessibility in news websites is best understood by examining the three depths of competency in my journey as a designer and how it led to an awareness of ethical concerns in mainstream news media.

My senior year of college, I enrolled in a course called "Multimedia Planning and Design." Throughout the semester I was exposed to the world of web design and development and quickly became enamored with the craft. Line by line I learned to build websites from my new, blank canvas—a text editor—awestruck when I could create interactive elements on a webpage. I started to explore the realm of user experience and experiment with what made a site more engaging.

I had always admired beautiful design, but never thought I possessed the talent to be a designer. With serious encouragement from my boss, a graphic and web designer, I completely changed my undergraduate path and decided to pursue multimedia design as a career. I obsessively absorbed design podcasts, literature and advice, gaining a deep respect of the fundamentals of design: hierarchy, typography, layout, color theory and craftsmanship.

This foundational education, I soon learned, was merely a shallow dive. I had barely scratched the surface on understanding the meaning of design and how to be an effective visual communicator.

Meanwhile, I was given opportunity to put my newfound design knowledge to use at my video production job in the College of Engineering. What began with a cautious foray to develop a dry, procedural infographic evolved into motion video graphics, page templates and eventually development of a responsive website from concept to finish. During this time, I had

the opportunity to work alongside my boss and learn as his apprentice.

In this environment, I was introduced and expected to abide by web standards. Concepts such as usability and semantic markup were imperative. Seeing the world through the user's eyes was an expectation in every design decision. Simultaneously, Ethan Marcotte's *Responsive Web Design* and Luke Wroblewski's *Mobile First* books were redefining and setting new standards in the web design world. Both books were extremely influential on my approach to web design. The *Mobile First* mentality preaches that designing for small screen sizes first and gracefully transitioning to larger desktops will ultimately make a better experience for all users. Wroblewski's belief is that small screens have less real estate for extraneous elements and force the designer to focus on what is necessary to the user.

Using the *Mobile First* approach, I had a solid understanding of the importance of content-driven, device agnostic design. I patted myself on the back for creating websites that were usable on a myriad of devices. It was not until September 2012, when I attended the *Accessibility Summit* webinar that I realized that I my definition of usability was excluding an entire sector of the population. I had naïvely grouping all users together—never stopping to consider the degree of their abilities. I was unknowingly guilty of creating barriers-to-access that stemmed from design decisions based on average user expectations.

As I began to embrace accessibility, I saw that designing for the typical user was a way for me to validate the exclusion of fringe cases. Studying Universal Design books such as Don Norman's *The Design of Everyday Things,* I began to see accessibility as a core tenet of great design, not as a retrofit option.

The passion that fueled the accessibility evangelists at that webinar was contagious and has transformed me into an advocate for the disabled community. Often, a web designer will explore a website's source code. With this expanded consciousness, exploration of website source code—mainstream news sites in particular—has left me feeling appalled; I find

multiple barriers for users with disabilities at every turn.

What I find interesting is that the ideals of accessibility closely parallel the principles of journalism: they both are concerned with providing equal access to information. As I become more aware of the core values of the accessibility movement, the more I recognize the overlap with traditional ideals of journalism, such as those stated in Walter Williams' "The Journalist's Creed." It has become clearer that mainstream media is excluding a segment of society in online news. As a result, people with disabilities are denied their constitutional right to news and the journalism industry is failing to ensure a free marketplace of ideas. This is unethical. However, the journalism industry does not seem to be having conversations about the severity of this nor working toward a solution. A communication gap exists between users with disabilities and news media websites.

Being a problem-solver at heart, I feel compelled to find a solution. I want go beyond the industry standard of average websites for average people. The clearest path for doing so is to make websites that respect all users, leading to what my academic and professional experience has shown me will be a better user experience for all users. I am proposing to create *NewsA11y*, a web app that facilitates dialogue about the barriers-to-access that people with disabilities encounter. *NewsA11y* urgently needs to exist to help the journalism industry meet its obligations to society. I believe that my academic and professional experience have uniquely placed me in a position to develop this project.

Professional Skills Component

This will be an independent project that I will work on from Columbia, Missouri. The University of Missouri College of Engineering will compensate me for my work. It will demonstrate my capacity for multimedia design, specifically catering the design to users with

disabilities. I am proposing to create a web-based platform, *NewsA11y*, for users with disabilities to describe the barriers they experience when consuming American news online. Through crowd-sourced user reviews, it will encourage a continual dialogue about accessibility barriers, instead of the traditional and ineffective "checklist mentality" approach.

The web application will give invaluable insight to web developers and designers in news agencies. If a news organization is interested in individual user testing, the app will put them in touch with a verified user who uses the accommodations that they want to test. As a result, news organizations will be able to better meet accessibility needs much faster.

News organizations will be able to test their site in any capacity—from large-scale redesigns to testing captions on a video. In an environment where fast-paced, iterative design is the norm, *NewsA11y* will better serve the testing needs of media outlets by allowing stakeholders the ability to:

1. Know which barriers are affecting users the most
2. Ask the disabled community to review a new design

Since January 2011, I have worked as a multimedia designer and video producer for the MU College of Engineering. Throughout the past year I have created accessible standards compliant sites and videos for the College news, magazine and giving websites. I have provided captions for all videos, so that both viewers with disabilities and non-native speakers can follow along. By completing coursework in Graphic Design, Information Technology and Journalism, I have gained a solid, educational foundation in subjects relevant to my project. Since Summer 2012, I have also worked for a digital publishing company, *Mag+*, as a designer. The designs I created placed emphasis on readability and simplicity on touch devices. The following semester I taught these skills to designers in the journalism program and provided

training materials on how to use the *Mag+* software. Additionally, my role evolved into providing technical support for the company. This has taught me to look at the world through the eyes of a beginner, which has a lot of obstacles in it. It also helped me gain invaluable insight on the common misconceptions about accessibility in the designer and developer community. Professionally I have attended several accessibility-specific workshops and webinars, including accessibility sessions at Apple's Worldwide Developer Conference.

The project will begin on August 26, 2013, and end on November 18, 2013. I will work on the professional skills component from 9:30 a.m. to 5:30 p.m. with an hour break Monday through Wednesday and on Fridays. Thursdays will be devoted to developing the professional analysis component. My role will be to create an accessible mockup of all the HTML views necessary for the app to function. By the project end date, I will have created a fully designed prototype website that will be available to view online at *NewsA11y.org.* This will ensure that the app can move fully forward if it receives funding past the professional project timeframe.

Supervision

Charlie Triplett, I-Net Administrator for the University of Missouri College of Engineering, will serve as my supervisor. Charlie will work directly with me to establish timelines and ensure that these goals are met. We will meet in person, correspond via email and use the project management software, *Basecamp*, to maintain communication.

Detailed Work Description

By the end of the 12 weeks I will have created views that are ready to hand to a developer, if funding is available.

Weeks 1 & 2

- Put schedule outline and goals into *Basecamp*

- Interviews with news consumers who are disabled

Week 3:

- Accessibility review of three mainstream news outlet homepage and two of its content pages (news posts and video)

Week 4:

- Determine biggest obstacles to accessing actual hard world / political news

Weeks 5, 6 & 7:

- Develop interface to report the biggest obstacles

Weeks 8 & 9:

- Design and develop front-end website

Week 10:

- Develop $20,000 *Kickstarter* campaign
- Begin developing backend user account / administrative views

Week 11:

- Develop backend user account / administrative views

Week 12:

- Develop backend user account / administrative views

Professional Analysis

With the proliferation of digital consumption, the journalism industry is faced with evaluating its effectiveness in fulfilling its role in society. Building upon the libertarian theory of the press, as described by Siebert, Peterson, and Schramm (1963), the primary role of the mass media in the United States is ensuring that every citizen has an equal right to the access of information. Expanding on this definition, others have stated that the journalism institution

exists to protect liberty by providing all citizens with knowledge and a platform for public discourse (Kovach & Rosenstiel, 2007).

However, findings have suggested that people with disabilities often experience barriers-to-access while browsing websites. For example, a study by Murphy, Kuber, McAllister, Strain, and Yu (2008) revealed that some visually impaired users copy and paste text from websites into word processing programs if the website is too confusing or if the navigation is frustrating. Since nearly one in five people have a disability in the United States (U.S. Census Bureau, 2012), this presents a grave ethical dilemma. The failure to ensure a diverse, open marketplace of ideas limits the rights of the individual. The societal consequence of this denial is that a digital divide is created for people with disabilities and therefore they are treated like second-class citizens. Ultimately, the journalism industry is not fulfilling its responsibility in a democratic nation.

For my professional project, I am proposing to examine how mainstream news outlets can better serve people with disabilities by removing barriers-to-access that are experienced while browsing news online. By facilitating an environment that encourages discourse between designers, developers and people with disabilities, I will be able to assess how online news outlets can ensure an accessible-first approach becomes an integral part of its design process so that industry implementation is more pragmatic. I will also examine to what degree accessibility accommodations might have a positive impact on all users.

Inasmuch the end of the art of shipbuilding is a ship, the end of a degree in multimedia design is barrier-free communication. Since the project will involve designing a web application that people with disabilities will be using, it will have to exhibit minimal barriers-to-access. Thus, I will hopefully gain invaluable insight and grow exponentially as a designer throughout executing the project. By striving to maximize the signal-to-noise ratio, I will be forced to reevaluate my traditional approach to web design.

Theoretical Framework

The history of product development cements the argument that what begins as extreme use can eventually become mainstream. This pattern is prevalent in a variety of industries, such as between the commercial automotive industry and the automotive sport industry. This beneficial outcome of extreme use products is illustrated in commonplace consumer automotive safety features. Disc brakes, roll cages, and rearview mirrors are all features that originated in racing environments (Deaton, 2008). The extreme use case becoming mainstream is apparent between traditional accessibility accommodations and mobile accommodations.

Trewin (2006) proposes a strong relationship between mobile and accessible web design, particularly when comparing physical usability. Mobile users often encounter similar barriers-to-access as visually disabled and motor impaired users, but those with the aforementioned disabilities have a higher cognitive awareness of these obstacles. This occurrence is defined as a situationally induced impairment (Yesilada, Brajnik, & Harper, 2011).

It can be hypothesized that by using an accessible-first design approach, all consumers of news will benefit, because a consequence of accessible design is lower barriers for everyone. Therefore, a new paradigm exists: every user is an extreme use case.

For my professional project, I am hypothesizing that facilitating a more instantaneous feedback loop will foster an environment in which mainstream media outlets can iteratively include accessible accommodations into their designs. This will address the ethical dilemma of excluding users with disabilities and as a byproduct, create a better experience for all.

Literature Review

As the media landscape continues to rapidly evolve, the journalism industry is faced with reevaluating its effectiveness in fulfilling its role in society. It is a well-accepted notion that the press in a democracy serves as a watchdog to the government that exposes truthfulness and provides an open forum for public debate. Furthermore, the journalism institution exists to protect liberty by providing all citizens with knowledge and a platform for public discourse (Kovach & Rosenstiel, 2007). Parallel to this is the libertarian theory of the press, which has an extensive history that is deeply rooted in the democratic principles of government. Siebert, Peterson, and Schramm (1963) define the primary role of the mass media in the United States as ensuring that every citizen has an equal right to the access of information. Particular emphasis in the libertarian rationale is placed upon meeting the needs of its society. The authors draw heavily on the beliefs of influential figures such as Thomas Jefferson, John Stuart Mill, John Milton and John Locke. Since its inception, the authors state, the libertarian theory of the press placed value on providing an equal opportunity of access:

> Let every man who has something to say on public issues express himself regardless of whether what he has to say is true or false, and let the public ultimately decide (p. 51).

Although the authors were describing the roots of the libertarian theory, it is still applicable to the definition of journalism today. Any restriction to equal access to news fails to provide a diverse, open marketplace of ideas and therefore limits rights:

> In order for truth to emerge, all ideas must get a fair hearing; there must be a "free market place" of ideas and information. Minorities as well as majorities, the weak as well as the strong, must have access to the press. This is the theory of the press which was written into our Bill of Rights (Siebert, Peterson, & Schramm, 1963, p. 4).

If minorities no longer have access to the press, it is no longer true that all ideas are getting a fair hearing. With drastic transformations in the journalism industry, the definition of access should be reevaluated—especially considering the adoption of online news. United Nations

official, Frank La Rue, (2011) argues that universal access to the Internet should be a priority because it has become a pathway for understanding and addressing inequality. Expanding on La Rue's belief, Mathiesen (2012) defends the philosophical case that access to the Internet should be a considered a human right:

> While access to the Internet is not a "primary" right, it can be derived from the primary right to communicate. Furthermore, since the right to communicate is a linchpin right that empowers people to exercise their rights and fulfill their responsibilities, states have an obligation to see to it that people have access to Internet technology (p. 20).

According to the aforementioned sources and theories, online news services should be ensuring that they are providing equal access to consumption.

Evolving Media Landscape

After 80 years of producing a weekly print magazine, *Newsweek* announced in October 2012, that it would end its print publication and shift to a digital-only version. The death of a publication has been a recurring theme in the print industry, as online news services have become the primary vehicle for news consumption (Siles & Boczkowski, 2012). With the proliferation of digital consumption, the mass media industry has compelling motivation to reevaluate the accessibility of news. Research suggests that a lack of access to information has societal consequences and creates a digital divide:

> Information is a centrally important determinant of life chances; inequality in access to and use of information is a systematic source of social inequality; and cumulative patterns of disadvantage in access to different types of information may have cumulative consequences (Neckerman, 2004, p. 391).

However, traditional parameters for study of the digital divide have been based off of the location of consumption or connection speed—typically whether or not users have broadband Internet at home. Horrigan (2009) states that with the increase of internet-enabled mobile

devices, "having broadband at home is no longer inevitably associated with elite status for a tech user" (p. 98). Furthermore, increased mobile Internet access has dissolved barriers-to-access for certain consumers (Fox, 2010). But simply gauging access to information based on these traditional factors does not encompass all aspects of the digital divide. Even though one aspect of it has been erased, design-induced barriers are creating another digital divide in access to content.

While an increasing number of news platforms are adapting their designs for cross-platform delivery, technology is simultaneously making it possible for users with disabilities to access a myriad of content. Screen readers make it possible to connect users with vision impairments to the rest of the digital world—reaching an ecosystem of users unavailable to the print medium. Despite the opportunity provided by technological advancements, many users are still being denied their constitutional right to news everyday because of poor design. For example, a study by Murphy, Kuber, McAllister, Strain, and Yu (2008) revealed that some visually impaired users copy and paste text from websites into word processing programs if the website is too confusing or if the navigation is frustrating. Barrier-free design, also known as accessibility, is design that is accommodating and usable by all people involved and doesn't create setbacks or obstacles for users.

In 2002, a study found that of 69 online news sites, only 3% of them had fully accessible homepages. Although this increased to 7% a year later, it is still concerning because a homepage is "the gatekeeper to the rest of the site" (Davis, 2003, p. 476). Building upon the libertarian theory, this failure to provide equal access to news and not meeting the needs of our citizens suggests that journalists are not fulfilling their primary role in society.

Limits of Standardization

Perhaps the media industry is not to blame for the oversight of accessibility compliance. The web community has yet to develop a set of guidelines that designers and

developers agree is most suitable. In 1997, the World Wide Web Consortium (W3C) created the Web Accessibility Initiative (WAI) to advocate accessibility and establish guidelines. However, their focus is fraught with verbose technicalities and 16 years later, little progress has been made. Cognitive disabilities, such as dyslexia, are barely mentioned in these guidelines and are given low-level priority for meeting accessibility compliance. Friedman & Bryen (2007) argue that this exclusion is severe because cognitive disabilities affect more than 22 million Americans. In their design recommendations for users with cognitive disabilities they state, "The potential power of the Web is its universality and it being available to everyone" (p. 208).

Frustrated with the direction of the WAI's Web Content Accessibility Guidelines (WCAG), Kelly et al (2009) began to create their own guidelines, which they coined *Accessibility 2.0*. Their research includes case studies of practical implementation, which could be adapted and improvised for media outlet websites. The authors argue that accessibility should be a user-focused approach that is always in beta and should not be executed with a one-size-fits-all mentality. Criticizing the WCAG, they state the benefits of combining their Tangram and Stakeholder Models:

> The aim of this approach is to provide a solution that maximizes the usefulness to the end user, as opposed to the current WAI approach, which encourages mandatory application of a limited set of guidelines...At the heart of both models are concepts of flexibility, contextualization, and user-involvement. Both models are underpinned by the argument that good design will be mediated by more factors than just a single set of guidelines (pp. 274-275).

This approach to accessibility combines three qualities of what websites should be striving to achieve: flexibility for future technology, contextualization of consumption and user-centered design. Norman (2002) describes the philosophy of user-centered design as focusing on the

needs of the consumer, resulting in an easy-to-understand and usable product. This paper builds on this concept and argues that understanding and designing for the context of consumption will lead to better user-centered design resulting in greater web accessibility for everyone.

Mobile Consumption Behavior

In the context of mobile Internet usage, the perception that mobile device users only desire abridged versions of content is no longer valid. Survey research has shown that the majority of smartphone users are not consuming online content "on-the-go;" rather many are browsing leisurely from their home (Wroblewski, 2011).

In a 2011 survey, 79% of smartphone owners reported using their phones for instant information seeking purposes within the past 30 days. Of those same smartphone owners, 72% reported using their phones as entertainment or because they were bored. One in five reported using their phone to avoid interacting with people around them by pretending to be busy (Smith, 2011). Media consumers are using their devices for a range of reasons, not just for instantaneous information.

Even though Internet-enabled devices have become more ubiquitous, the goal-oriented behavior of the audience remains the same. A common misconception in cross-platform content delivery is that non-desktop users prefer a simplified, bare bones version of a site. According to McGrane (2013), this is vastly untrue relative to content, because people are willing to do complex tasks on their mobile device. Users do not want to be deprived of content just because they are browsing on a smartphone. At face value, this data illustrates the importance of access to content via mobile devices. Beyond that, research suggests there is a parallel between the experience of mobile users and users with disabilities.

Mobile Consumption Yields Situationally Induced Impairments

Trewin (2006) proposes a strong relationship between mobile and accessible web design, particularly when comparing physical usability. Mobile users often encounter similar barriers-to-access as visually disabled and motor impaired users, but those with the aforementioned disabilities have a higher cognitive awareness of these obstacles. This occurrence is defined as a situationally induced impairment (Yesilada, Brajnik, & Harper, 2011). Consider the following scenario: a user is browsing a news site on their smartphone. This user encounters similar barriers that visually impaired users experience: The type size is too small and the body text has poor color contrast with the background. An example of this phenomena corresponding to motor impairments is evident when a mobile user is trying to comment on a story online and they are struggling to input their login information because they are typing on a tiny on-screen keyboard. The mobile user enters the wrong password a few times and is forced to type the picture verification image (CAPTCHA). They might experience the same frustrations that motor impaired users do on a desktop version of the site. Observing how mobile users interact with their devices in this context could help designers understand how to approach accessibility in various digital platforms. Wroblewski (2011) describes mobile users as:

> people with "one eyeball and one thumb." One thumb because they are likely to be holding their mobile in one hand and using a single thumb to control it; one eyeball because in many locations where mobile devices are used we only have people's partial attention (p. 25).

Essentially, these consumers are voluntarily using devices that simulate situationally induced impairments. Although this describes the experience of mobile users who are filtering an elevated level of stimuli, it could also illustrate the experience of users who have cognitive disabilities. Therefore mobile users present designers with a framework for understanding what can be technically considered extreme use cases.

Fringe Cases into Mainstream

The history of product development cements the argument that what begins as extreme use can eventually become mainstream. This pattern is prevalent in a variety of industries, such as between the commercial automotive industry and the automotive sport industry. This beneficial outcome of extreme use products is illustrated in commonplace consumer automotive safety features. Disc brakes, roll cages, and rearview mirrors are all features that originated in racing environments (Deaton, 2008). The extreme use case becoming mainstream is apparent between traditional accessibility accommodations and mobile accommodations. Solutions that worked to increase desktop accessibility are being implemented in mobile technology, such as touch screens and voice recognition. Harper and Yesilada (2008) view designing for web accessibility as an über use case instead of extreme use case, because it is founded with a user-centered focus that must be flexible to personalization. Therefore, the authors argue that to "understand the needs of disabled users is to understand the needs of everyone" (p. 8). Potentially, solutions for extreme use cases can answers demands that the average user might benefit from and appreciate.

New Paradigm: Every User is an Extreme Use Case

By approaching design with accessibility as a foundation in all cross-platform contexts the media can fulfill its role in a democratic society. Other industries elsewhere on the web have recognized the need to embrace accessibility and are implementing solutions that ultimately are benefiting users in all contexts (Wroblewski, 2011). According to Lidwell, Holden, & Butler (2003), there are four characteristics of accessible designs: perceptibility, operability, simplicity, and forgiveness:

> Perceptibility is achieved when everyone can perceive the design regardless of sensory abilities...Operability is achieved when everyone can perceive the design regardless of physical abilities...Simplicity is achieved when everyone can perceive the design

> regardless of experience, literacy, or concentration level...Forgiveness is achieved when designs minimize the occurrence and consequences of errors (p.16).

It can be inferred that these four accessible design considerations will benefit all consumers of news, because a consequence of accessible design is lower barriers for everyone. Increasing access to information and public discourse means journalism is becoming more effective at fulfilling its primary role in society.

Solution: Accessible-First Design

The aforementioned barriers are not unique to the journalism industry and many solutions exist in other fields across the web. The media no longer has an excuse to dismiss users with disabilities and therefore accessibility should not be an afterthought. By prioritizing accessibility as the default mindset in the design process, news organizations can create a better user-experience for all media consumers. For example, one of the pivotal web accessibility principles outlined by Rutter et al (2006) is to fulfill various user needs by designing flexible websites. An added benefit of this flexibility is that it also "increases general usability and lets people without disabilities use websites according to their preferences, such as using whichever browser they want and using keyboard shortcuts" (Rutter et al, 2006, p. 3).

An adaptable design approach is being applied to solve mobile web design constraints. The term responsive web design was coined by web designer Ethan Marcotte (2011) who describes it as a flexible website that adapts relative to the medium in which the user accesses the site. This approach is widely accepted in the Web industry and Walton (2012) advocates the advantages of responsive design stating:

> In the case of [a] news outlet, it would have one version to maintain, one version to budget for and one version of consistent content for users. Thus, when new devices hit

> the market (like seven-inch tablets), it wouldn't have to segment its Web budget again to start from scratch on a whole new experience (p. 92).

Not only does this address flexibility for future technology, but also makes implementation more pragmatic. By borrowing strategies for cross-platform design, the journalism industry can accommodate for these seemingly fringe use cases.

Methodology

Users with disabilities—either in the traditional sense or situationally induced—are consuming news online. By prioritizing access, the media industry is treating impaired users like second-class citizens. Technology has reached a point at which there is no excuse for giving non-impaired users priority access in news media design. If the media is to fulfill its responsibility in a democratic nation, it must adopt accessibility to ensure an open marketplace of ideas.

I am proposing to create the HTML views for an entire web application, *NewsA11y*, that will provide a platform for Americans with disabilities to describe the barriers they experience when accessing news online, and likewise give insight to web developers and designers in news agencies.

The development of the views will serve two main purposes. First, it will illustrate an accessible front-end website focused on describing the app and encouraging user signup. Secondly, it will serve as a prototype for how users with disabilities can publish reports on the accessibility barriers that are common to news websites.

RQ: How can online news outlets ensure an accessible-first approach becomes an integral part of its design process so that industry implementation is more pragmatic?

Target Publications

A List Apart

Interacting with Computers

The Loop

Pew Internet & American Life Project

NPR

Technology and Disability

References

Davis, J. J. (2003). Accessibility Divide: The Visually-Impaired and Access to Online News, The. *J. Broad. & Elec. Media*, *47*, 474. doi:10.1207/s15506878jobem4703_9

Deaton, J. (2008). "Top 10 Everyday Car Technologies that Came from Racing" *HowStuffWorks.com.*

Friedman, M. G., & Bryen, D. N. (2007). Web accessibility design recommendations for people with cognitive disabilities. *Technology and Disability*, *19*(4), 205-212.

Fox, S. (2010). The Power of Mobile. *Pew Internet & American Life Project.*

Harper, S., & Yesilada, Y. (2008). *Web accessibility: a foundation for research*. Springer.

Horrigan, J. (2009). The mobile difference. *Pew Internet & American Life Project*.

Kelly, B., Sloan, D., Brown, S., Seale, J., Lauke, P., Ball, S., & Smith, S. (2009). Accessibility 2.0: next steps for web accessibility. *Journal of Access Services*, *6*(1-2), 265-294. doi: 10.1080/15367960802301028

Krug, S. (2009). *Don't make me think: A common sense approach to web usability*. New Riders.

La Rue, F. (2011). Report of the Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression. *Human Rights Council, 16*.

Lidwell, W., Holden, K., & Butler, J. (2010). *Universal Principles of Design, Revised and Updated: 125 Ways to Enhance Usability, Influence Perception, Increase Appeal, Make Better Design Decisions, and Teach through Design*. Rockport publishers.

Marcotte, E. (2011). *Responsive web design*. New York, NY: A Book Apart.

Mathiesen, K. (2012). The Human Right to Internet Access: A Philosophical Defense. *New ICTs and Social Media: Revolution, Counter-Revolution and Social Change, 18*, 9.

McGrane, K. (2013). *Content Strategy for Mobile.* New York, NY: A Book Apart.

Murphy, E., Kuber, R., McAllister, G., Strain, P., & Yu, W. (2008). An empirical investigation into the difficulties experienced by visually impaired Internet users. *Universal Access in the Information Society*, *7*(1), 79-91. doi:10.1007/s10209-007-0098-4

Neckerman, K. M. (2004). *Social inequality*. Russell Sage Foundation.

Norman, D. A. (2002). *The design of everyday things*. Basic Books (AZ).

Rosenstiel, T., & Kovach, B. (2007). *The Elements of Journalism: What Newspeople Should Know and the Public Should Expect, Completely Updated and Revised*. Three Rivers Press.

Rutter, R., Lauke, P. H., Waddell, C., Thatcher, J., Henry, S. L., Lawson, B., ... & Urban, M. (2006). *Web accessibility: Web standards and regulatory compliance*. FriendsofED.

Siebert, F., Peterson, T., & Schramm, W. (1963). *Four theories of the press: The authoritarian, libertarian, social responsibility, and Soviet communist concepts of what the press should be and do*. University of Illinois Press.

Siles, I., & Boczkowski, P. J. (2012). Making sense of the newspaper crisis: A critical assessment of existing research and an agenda for future work. *New Media & Society, 14*(8), 1375-1394. doi:10.1177/1461444812455148

Smith, A. (2011). Americans and their cell phones. *Pew Internet & American Life Project, 15*.

Trewin, S. (2006, May). Physical usability and the mobile web. In *Proceedings of the 2006 international cross-disciplinary workshop on Web accessibility (W4A): Building the mobile web: rediscovering accessibility?* (pp. 109-112). ACM. doi: 10.1145/1133219.1133239

U.S. Census Bureau. (2012). *Nearly 1 in 5 People Have a Disability in the U.S., Census Bureau Reports*. Retrieved from http://www.census.gov/newsroom/releases/archives/miscellaneous/cb12-134.html

Yesilada, Y., Brajnik, G., & Harper, S. (2011). Barriers common to mobile and disabled web users. *Interacting with Computers, 23*(5), 525-542. doi:10.1016/j.intcom.2011.05.005

Walton, T. (2012). *Responsive Design Strategy.* Smashing Magazine.

W3C. (2008). *Web content accessibility guidelines 2.0*. W3C working draft.

Wroblewski, L. (2011). *Mobile first*. New York, NY: A Book Apart.