

Access Remade: Designing, Disrupting, and Transforming Inclusive Media

Sean Zdenek
Associate Professor
Technical & Professional Writing
University of Delaware
zdenek@udel.edu

Emory University
27 February 2020

[slide: presentation materials] Disability is usually defined in terms of limitations and impairments. The Americans with Disabilities Act (ADA) defines “an individual with a disability” as “a person who has a physical or mental impairment that substantially limits one or more major life activities, a person who has a history or record of such an impairment, or a person who is perceived by others as having such an impairment” (U.S. Department of Justice, 2009). In the United States, nearly one in five people (20%) has a disability (U.S. Census Bureau, 2012). Globally, more than one billion people are disabled (World Health Organization, 2011). **[slide: disability]** The disability rhetorics of impairment—which are predicated on a language of loss, lack, and less than—are deeply ingrained in our unexamined attitudes and approaches towards people with disabilities. Disability as impairment is closely aligned with rhetorics of cure that define disabled bodies as broken and in need of fixing at any cost. For example, one of the major myths of disability in popular culture, according to Jay Dolmage (2014), is “kill-or-cure,” in which “a disabled character will either have to be ‘killed or cured’ by the end of any movie or novel in which they appear” (p. 39). Closely related is what Dolmage calls “disability as pathology,” which reduces disability to a medical problem that can “never be understood as something positive” (p. 37).

Disability studies has its origins and futures elsewhere. Instead of invoking rhetorics of pathology and impairment, instead of objectifying in the name of “inspiration porn” (Young, 2014), instead of unconsciously centering “default” (able-bodied) users, instead of reducing accessibility to checklists, scholars are reimagining and centering disability and difference in our practices, pedagogies, and theories.

Disability studies starts with, and seeks to include at every phase, the voices, perspectives, and values of people with disabilities. The disability rights slogan, “Nothing about us without us”

(Charlton, 2000), is a reminder that 1) access is a human right and 2) true diversity must include people with disabilities as researchers, users, participants, students, and colleagues.

[slide: **add-and-stir**] Disability studies challenges the “add-and-stir policy that used to haunt race, gender, and queer studies” (Erevelles 93). Such a policy accommodates disability but only as a single reading in a course, a single assignment or activity, a case for special consideration, or a narrowly defined checklist to comply with digital accessibility mandates (see Browning 97). The add-and-stir problem may go by other names in the contexts of web accessibility and universal design: tack-on, add-on, afterthought, and retrofit, among others (see Dolmage; Udo and Fels). When disability is additive, when it is tacked onto our practices and pedagogies, it tends to reinforce the institutional status quo that positions disability as an exception to the norms of nondisabled bodies and minds.

The checklist is arguably a barrier to full inclusion. While checklists in the classroom “are useful in some circumstances because they offer a place to start,” they are often reductive (Wood et al. 147). They are similar to “tip sheets,” which provide answers (but a false sense of certainty) to “persistent questions about ‘what to do’ with a student with a particular disability that almost always occur at the end of workshops about disability and teaching” (Kerschbaum). Checklists inscribe disability as a problem for individuals to overcome, instead of an opportunity to reflect on the ideologies of normalcy that checklists perpetuate (Oswal and Melonçon).

As an alternative to the add-and-stir approach, Tara Wood and colleagues argue for a “more holistic, recursive approach, one in which disability becomes a central, critical, and creative lens for students as well as teachers” (148). A disability lens “sharpens our focus on important concepts including adaptation, creativity, community, interdependency, technological ingenuity and modal fluency” (148). As Ella R. Browning puts it: when we “actively integrate disability, in thoughtful and creative ways, into all aspects of our teaching,” we can “transform” our classrooms and pedagogies (100). [slide: **insight**] According to Brenda Brueggemann, disability “enables insight—critical, experiential, cognitive, sensory, and pedagogical insight” (Brueggemann 2002: 795). Rather than considering questions of access from the margins, disability studies places disability and difference at the center of our practices and pedagogies (814).

Consider how recent research on Deaf Gain challenges the belief that deafness can only be a tragic absence, a hearing *loss*. What does it mean for our teaching and practice to reimagine Deafness 1) as an identity within Deaf Culture, and 2) as a positive expression of biocultural diversity? In their edited collection on *Deaf Gain*, H-Dirksen L. Bauman and Joseph Murray (2014) summarize some of the key attributes of Deaf Gain: “enhanced and prolonged eye contact, intersubjective engagement, collectivist social patterns, transnational bonds, less

auditory distraction, and acute visuospatial aptitudes” that “contribute to a new perspective on what it means to be deaf” (p. xxvii).

[slide: **Deaf gain**] This new perspective can be generative for scholars and practitioners of digital media. As an expression of biocultural diversity and a critique of normalcy, Deaf Gain can help disrupt fundamental assumptions and dichotomies that support institutional cultures of accommodation and remediation. In digital composition, a Deaf perspective can challenge certain conceptions and constructions of time and space as ableist. How readers experience closed captions as timed-based reading events, for example, can form the basis of new theories of reading speed (see Zdenek, 2015, pp. 141-182) [slide: **reading speed data viz**]. Driven by the preferences and abilities of caption viewers, especially viewers who are deaf and hard of hearing, new theories of reading can be integrated into research studies on how audio, video, and text intersect and overlap for diverse users. [slide: **DeafSpace examples**] Moreover, studies of film from Deaf perspectives can inform film design. Janine Butler (2017) has explored how the concept of “DeafSpace”—made popular in Gallaudet University’s philosophy of designing the built environment specifically for students and faculty who communicate in sign language—can reshape how film space is allocated and designed.

When we approach accessibility from the bottom up, when digital access is integrated and baked-in, we establish new directions and futures for our work. In caption studies, for example, we usually take for granted that words are good enough substitutes for sounds. [slide: **writing good enough?**] As I wrote in my book *Reading Sounds* (2015): “It usually goes without saying in captioning discussions and style guides that every film soundscape—no matter how complex, transcendent, or immersive—can always be translated into words. Is it problematic to assume that language is always up to the task? Is captioning really just a simple matter of translating across modes? Does every sonic event communicate semiotically?” (p. 139). [slide: **new question**] More recently, I’ve been reflecting on a new question: What would audiovisual accessibility look and feel like if captioners were unconstrained by the medium of writing and the act of transcription? This question, though admittedly idealistic, grows out of my increasing awareness of the limitations of traditional captions to adequately address several hard problems: [click] 1) Distinguishing multiple speakers in the same scene, 2) Signaling sonic dimensionality (near/far sounds, loud/quiet sounds), 3) Clarifying sustained or continuous sounds, and 4) Reinforcing the meaning of sound effects, ambience, and music (see Zdenek, 2018).

To address these problems, I have experimented with novel forms of captioning: typefaces, color, icons, loops, screen placement, avatars, and special effects (Zdenek, 2018). My goal was not simply to create more aesthetic captions but to express meaning—to embody it—through the power of form. [slide: **experiments**] For example, a captioned lullaby sung by ghostly children in a horror movie might literally materialize out of the smoky ether. [click] The

sustained heartbeat sounds in a training video or tense movie scene might be visualized as an electrocardiogram readout in the corner or across the bottom of the screen. **[click]** The speech captions of a fictional character who is based on a real politician might be rendered in the typeface or visual style of the politician’s campaign rhetoric. **[click]** Repetitive “cross now” announcements emanating from a futuristic crosswalk sign in a science fiction movie might be visualized as a flashing icon in the creative style of the sign itself. Put simply, embodied captions compel us to reimagine digital access for every sighted viewer. Too often, accommodations made in the name of users with disabilities, such as closed captioning, are 1) defined narrowly, technically, and objectively, and 2) positioned as add-ons for a presumed finished product. Even as captioning is held up as one cornerstone of universal design, it hasn’t been well integrated into our processes of production (Udo & Fels, 2010). When we experiment with alternative and disruptive forms of digital access, we question narrow definitions of captioning as mere transcription and, more importantly, start to imagine different disability and accessibility futures (see Kafer, 2013, pp. 3, 16) that put captioning in closer contact with mainstream scholarship in visual rhetoric, multimodal composition, data visualization, and sound studies. **[view video clips]**

Experimental captions offer new possibilities, but they aren’t intended to supplant the power and efficiency of words to create accessible content. **[slide: writing]** Writing will continue to remain foundational to the practice (and art) of designing accessible texts. That’s because the web is increasingly powered by images and video, which are made accessible when transformed into writing. According to Cisco’s projections, Global “IP video traffic will be 82 percent of all IP traffic (both business and consumer) by 2022, up from 75 percent in 2017” (Cisco, 2018). Netflix alone is responsible for more than one-third of all internet traffic in North America (Luckerson, 2015). On social media platforms, images reign, with “more than 2 billion photos uploaded” *each day* to Facebook, Messenger, Instagram, and WhatsApp (Wu, Wieland, Farivar, & Schiller, 2017). Even Twitter, with its origins in text-only communication and strict character limits, “is quickly morphing from a primarily text-based medium to a primarily multimedia one” (Ringel Morris et al. 2016, p. 5515).

To make multimedia accessible, we need writing. We need professional writers who are trained in the art and rhetoric of accessible description. Accessible texts are composed with and transformed into words: image descriptions, captions, large print and magnified texts, transcripts, audio descriptions, and more. In the technical and legalistic language of web accessibility guidelines, captions and other forms of access are considered “text alternatives” for “non-text content” (World Wide Web Consortium, 2018b). Electronic texts possess immense power. They make media perceivable for a wide range of users. They are “presentation neutral,” which means that they can be rendered according to the sensory needs of the user: “visually, auditorily, tactilely, or any combination” (World Wide Web Consortium, 2016). Texts can be enlarged (large print versions), synced with time-based media (captions),

spoken by a screen reader or speech output program, transformed into tactile signals (refreshable braille displays), and more. Images, audio, and video do not possess the same versatility.

The future of an accessible web will continue to depend on artful forms of writing *even as* internet traffic is consumed by non-text content. We should teach students to approach digital accessibility as a *literate practice* and not simply a technical exercise in coding, transcribing, or tagging content. Web accessibility guidelines focus on the finished product: “text,” “text alternatives,” and “non-text content.” Digital professionals can approach accessibility with a writer’s sensibility and through the principles of style, rhetoric, art, design, and audience analysis. Web accessibility experts—and the students we teach in our classes—must learn to think like writers who are sensitive to the needs of their audiences, the affordances of language, and the contexts and constraints of space and time in which they are working. We don’t usually discuss digital accessibility in these terms: literacy, writing, rhetoric, style. By putting writing and literacy at the center of an accessible web, we challenge dominant narratives about the web itself (that it is mostly driven by images and video) and make visible how writing fashions accessible user experiences. So much emphasis has been placed on the technical aspects of web accessibility, but we need to keep in mind that the web becomes legible for everyone principally through humanistic and rhetorical acts of reading and writing texts.

[slide: automation] Automation has revolutionized and simplified the practice of making the web accessible. Advances in machine learning, image recognition, speech recognition, and web standards have produced powerful tools for captioning sounds, describing images, writing inclusive documents, serving content in learning management platforms, and automatically checking websites against a set of accessibility standards. Tools, checkers, wizards, and automated processes raise the profile of web accessibility and, perhaps more importantly for writers and designers, simplify what can sometimes seem like a daunting, time-consuming, and complex process. But automated tools also give the false impression that accessibility is so easy a machine can do it.

Accessible image description, or alt text, offers a good case study for exploring the challenges of automating accessibility. Alt-text is a written description of an image that increases access for blind and low vision users. Screen reader programs speak the contents of websites, including image descriptions, as users listen, usually at high speeds of 300 words per minute or more. **[slide: example human alt-text]** Alt-text is stored in the HTML code and not usually displayed to sighted viewers. Alt is also a required attribute, which means that every IMG tag must have alt-text, including null alt-text for decorative images, to pass a conformance check for valid HTML.

Alt-text has been called “the first principle of web accessibility” (WebAIM, 2018). Millions of web users depend on quality text descriptions. It is our responsibility to write text descriptions to accompany the images we share and tweet. While awareness of alt-text as a concept seems high, alt-text itself is almost non-existent on Facebook and Twitter (unless you count the alt-text written by machines).

In 2016, Twitter added support for alt-text to Apple iOS and Android devices. **[slide: tweet from Rob Long]** According to a blind Twitter user, “it’s really simple [to add alt-text] and makes a huge difference to our twitter experience [sic] allowing us to see your images our way.” Users “have the option to compose a description of the images so the content is accessible to people who are visually impaired” (Twitter, n.d.). Note that Twitter defines alt-text as *optional*. While that may be legally correct for individuals, it isn’t the case for institutions that must ensure, following the ADA, that their websites and social media content are accessible. **[slide: not optional]** Legalities aside, however, we must continue to challenge the assumption that accessibility is optional.

On Facebook, users have the option of adding their own alt-text to their photos when they upload them. **[slide: my FB image description]** As far as I can tell, very few people write alt-text (although a few people write accessible image descriptions with their posts). Since 2016, Facebook has been generating alt-text automatically by applying object recognition technology to the two billion images that are uploaded each day to the Facebook sites. **[click]** The algorithm generates alt-text based on three categories: “people, objects, and scenes.”

[slide: quote] For each photo, we first report the number of people (approximated by the number of faces) in the photos, and whether they are smiling or not; we then list all the objects we detect, ordered by the detection algorithm's confidence; scenes, such as settings and properties of the entire image (e.g., indoor, outdoor, selfie, meme), will be presented at the end. (Garcia, Paluri, & Wu, 2016)

[slide: examples] In 2017, Facebook added support to its recognition algorithm for twelve actions, such as “people walking” (Candela, 2017). Examples of auto alt-text in my feed include:

Image may contain: grass, tree, sky, outdoor and nature.

Image may contain: sky, twilight, nature and outdoor.

Image may contain: people sitting and outdoor.

Image may contain: two people, people smiling, outdoor

Image may contain: text.

[slide: more examples] This is what Facebook accessibility looks like in the era of image recognition: a sea of automated alt-texts punctuated by missing alt-texts for images the AI

system could not identify. If an image contains writing, it is inaccessible to screen readers in the absence of alt-text, which the system may or may not be able to identify. **[slide: golf example]**

Facebook researchers have studied the usefulness of this automated system with blind screen-reader users (see Voykinska et al., 2016; Wu et al., 2017). “One of [their] most interesting findings,” according to lead researcher Shaomei Wu, “is that people [using screen readers] post, comment, and like photos as much as people who use Facebook without screen readers” (as cited in Holton, 2016). Blind participants reportedly found the automated descriptions “enjoyable and useful” (Wu et al., 2017, p. 2). They wanted more details in the descriptions, including the identities of faces in the photos and a “more socially-aware computer algorithm” (p. 2). **[slide: algorithmic failures]** But Facebook researchers wanted “to avoid social miscues and respect the privacy of those being described” (p. 2). Algorithmic failures could be costly. For example, researchers worried that “blind users could be misled to make inappropriate comments about photos in which humans are mis-identified as ‘gorillas’” (p. 3).

Image recognition technology is improving, but we should not cede control of rhetorical description to the machines or to the technicians. It isn’t yet clear how Facebook’s approach, which is based on recognizing and listing “all salient objects in the image” (Wu et al., 2017, p. 3) will be reconciled with the advice from web accessibility experts that “context is everything” (WebAIM, 2018). **[slide: complete description]** A complete description of a photo for the purposes of accessibility would not include a list of all the objects in that photo, if that were even possible, or even a list of all the actions performed by all the objects. Rather, alt-text, like captioning, is a rhetorical judgment made within a specific context and for a specific purpose. Disability studies scholars must also question the dominant values of automation, efficiency, surveillance, profit, and ableism that seem to be driving large scale image recognition projects in artificial intelligence and machine learning.

[slide: best reason] But the best reason, I think, for being mindful of social media accessibility—and for reimagining notions of audience—is that people want to participate and don’t always feel like they can. In a study of social network users who are blind, researchers at Cornell University, with support from Facebook, noted that the participants were quite savvy, adopting “creative strategies” in the absence of text descriptions. They were also “frustrated” by “accessibility challenges...that left them feeling excluded or incapable of participating in what they considered cultural mainstream” (Voykinska, Azenkot, Wu, & Leshed, 2016, p. 1588):

[slide: quotes] I feel that I am missing some of the fun stuff on social media, but I don’t want to waste too much time. (p. 1588)

I cannot see the photo, and people rarely ever describe it. They assume everyone on planet Earth has working eyes. If your eyes happen not to work, too darned bad. (p. 1590)

I have found it useless to ask family and friends to make sure their photos include description, because they usually ignore this request. (p. 1590)

When people include descriptions, it makes it so much easier for somebody who's blind to know what's going on and more fully participate in the posting of that picture or responding to that picture or video. (p. 1590)

I have practiced taking selfies and now I am quite good about it, but I am afraid to share except [with] my close friends, as even though I can take good selfie, it might not be perfect as others would take, and if I do something wrong I don't want to be a joke. (p. 1589)

Access should not be predicated on a user's sensory abilities, cognitive abilities, or access to resources such as high-speed internet or a specific device. "The power of the Web," as Tim Berners-Lee famously said, "is in its universality. Access by everyone regardless of disability is an essential aspect" (World Wide Web Consortium, 1997).

As a parent of a deaf son, I'm reminded every day that access is a human right and that my own ability to access inaccessible media is a form of privilege that needs to be continually challenged and transformed. **[Final slide: Thank you]**

References

Brueggemann, B. (2001). An enabling pedagogy: Meditations on writing and disability. *JAC: A Journal of Composition Theory*, 21(4), 791-820.

Candela, Joaquin Quiñonero. (2017, February 2). Building scalable systems to understand content [blog post]. *Facebook Code*. Retrieved from <https://code.facebook.com/posts/1259786714075766/building-scalable-systems-to-understand-content/>

Dolmage, Jay. (2005). Disability studies pedagogy, usability and universal design. *Disability Studies Quarterly*, 25(4). Retrieved from <http://dsq-sds.org/article/view/627/804>

Downey, Gregory John. (2008). *Closed captioning: Subtitling, stenography, and the digital convergence of text with television*. Baltimore: Johns Hopkins University Press.

Garcia, Dario Garcia, Manohar Paluri, and Shaomei Wu. (2016, April 5). Under the hood: Building accessibility tools for the visually impaired on Facebook [blog post]. *Facebook Code*. Retrieved from

<https://code.facebook.com/posts/457605107772545/under-the-hood-building-accessibility-tools-for-the-visually-impaired-on-facebook/>

Geitgey, Adam. (2016, December 30). Show facebook computer vision tags [computer software]. *GitHub*. Retrieved from <https://github.com/ageitgey/show-facebook-computer-vision-tags>

Griffin, Emily. (2016, January 4). 7 ways video transcripts & captions improve SEO [blog post]. *3Play Media*. Retrieved from <https://www.3playmedia.com/2016/06/14/7-ways-video-transcripts-captions-improve-seo/>.

Holton, Bill, (2016). Access to entertainment and social media: What Facebook wants you to know about automatic alternative text. *Access World Magazine*, 17(6). Retrieved from <https://www.afb.org/afbpress/pubnew.asp?DocID=aw170602>

Jones, Natasha, Kristen R. Moore, and Rebecca Walton. (2016). Disrupting the past to disrupt the future: An antenarrative of technical communication. *Technical Communication Quarterly*, 25(4), 211-29.

Schafer, R. Murray. (1977). *The Soundscape: Our Sonic Environment and the Tuning of the World*. Rochester: Destiny Books.

Twitter. (n.d.) How to make images accessible for people. Retrieved from <https://help.twitter.com/en/using-twitter/picture-descriptions>

Udo, J.P., and D. I. Fels. (2010). The rogue poster-children of universal design: Closed captioning and audio description. *Journal of Engineering Design*, 21(2-3), 207–21. <https://doi.org/10.1080/09544820903310691>

Voykinska, Violeta, Shiri Azenkot, Shaomei Wu, & Gilly Leshed. (2016). How blind people interact with visual content on social networking services. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing* (pp. 1584-1595). San Francisco, CA. <http://dx.doi.org/10.1145/2818048.2820013>

W3C. (2016). Images of text: Understanding SC 1.4.5. Retrieved from <https://www.w3.org/TR/UNDERSTANDING-WCAG20/visual-audio-contrast-text-presentation.html>

W3C. (2016). Introduction to Understanding WCAG 2.0. Retrieved from <https://www.w3.org/TR/UNDERSTANDING-WCAG20/intro.html>

WebAIM. (2018, February 21). Alternative text. Retrieved from <https://webaim.org/techniques/alttext/>

Yergeau, Melanie, Elizabeth Brewer, Stephanie Kerschbaum, Sushil K. Oswal, Margaret Price, Cynthia L. Selfe, Michael J. Salvo, & Franny Howe. (2013). Multimodality in Motion: Disability and Kairotic Spaces. *Kairos: A Journal of Rhetoric, Technology, and Pedagogy*, 18(1). Retrieved from <http://kairos.technorhetoric.net/18.1/coverweb/yergeau-et-al/pages/access.html>