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Communication Design Quarterly

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Guest Editor's Introduction: Reimagining Disability and Accessibility in Technical and Professional Communication

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SPECIAL ISSUE

*Reimagining Accessibility and Disability in
Technical and Professional Communication*

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INTRODUCTION

This special issue asks us to reflect on the transformative potential of disability studies to reimagine technical and professional communication (TPC). Informing this special issue is the notion that disability “enables insight—critical, experiential, cognitive, sensory, and pedagogical insight” (Brueggemann, 2002, p. 795). Rather than consider questions of access from the margins—e.g. after we receive a letter of accommodation from a student, when we need to satisfy a legal mandate, or when we turn to our organization’s web accessibility checklist—disability studies places disability and difference at the center of our practices and pedagogies (p. 814).

The contributors to this special issue build on the groundbreaking work at the intersection of technical communication and disability studies (e.g. Bayer & Pappas, 2006; Kain, 2005; Meloncon, 2013; O’Hara, 2004; Oswal, 2013; Oswal & Meloncon, 2014; Palmeri, 2006; Walters, 2010; Wilson, 2000; Theofanos & Redish, 2003, 2005). They recognize the importance of coalitional, intersectional research (Jones, Moore, & Walton, 2016; Walters, 2010). They ground ideas and methods in rhetorical theory and writing studies (Brueggemann, 1999; Lewiecki-Wilson & Brueggemann, 2007; Dolmage, 2014; Duffy & Yergeau, 2011; Oswal & Meloncon, 2017; Yergeau, 2018). They understand that TPC has much to offer disability studies in the areas of universal design, user interface design, cross cultural communication, workplace practices, web design and access, pedagogy and e-learning, usability, and more. Indeed, TPC can serve as a needed bridge between disability theory and the practice of making texts and technologies accessible.

The “field of disability studies is thriving” (Minich, 2016, para. 2), yet we must continue to challenge “objective, apolitical, acultural practices, theories, and pedagogies” (Jones, Moore, & Walton, 2016, p. 211) that reduce web accessibility to a checklist, add-on, afterthought, or mere legal obligation. Does disability enable critical insight for technical and professional communication? Can disability fundamentally transform our practices and theories (Palmeri, 2006, p. 52)? What does it mean to put accessibility, disability, and universal design at the center of what we do? How can we think through the implications for TPC that disability “pervades all aspects of culture” (Garland-Thomson, 2010, p. 355)?

CHALLENGING THE DEFAULT USER

Disability studies in technical and professional communication starts with, and seeks to include at every phase and level, the voices, perspectives, and values of people with disabilities. The disability rights slogan, “Nothing about us without us” (Charlton, 2000), is a reminder to technical and professional communicators that 1) access is a civil right and 2) true diversity must include people with disabilities as researchers, users, participants, students, and colleagues. Usability researchers, for example, have studied how people with disabilities use the web and how designers can build more accessible websites, but also, more importantly, why the perspectives of users with disabilities matter to our field. In their landmark usability studies of blind and low vision web users, Mary Frances Theofanos and Ginny Redish (2003, 2005) offer an important intervention in scholarly conversations about technology users:

We need a paradigm shift in the way we think about accessibility. We may be approaching accessibility from the wrong direction. Today, we are putting assistive technology on top of existing Web sites. We are changing Web sites after we build them. Accessibility is an afterthought. Instead of our current approach, we should think about accessibility from the bottom up, not as something put on top afterwards. (Theofanos & Redish, 2005, pp. 17-18)

What Theofanos and Redish (2005) identified as a problem over a decade ago—i.e. that accessibility is treated as an add on or afterthought—persists today because users with disabilities are still often treated as afterthoughts or accommodations in our practices.

Theofanos and Redish’s (2005) proposed solution grows directly out of their usability studies with an impressively diverse group of participants: low vision users. Because their participants couldn’t be categorized easily and accessed the web in countless different ways, a simple set of guidelines, or single website design, did not make sense. Instead, Theofanos and Redish (2005) offer a radically user-centered vision of the future, one that is grounded in and made possible by their study of low vision users, that begins with the access needs of each user rather than a default, able-bodied user. They imagine “serving up Web sites in individualized versions from the same source through technology that understands each user’s specific needs and adjusts the Web site to meet those needs” (p. 19). Their study reminds us that people with disabilities are not homogeneous. Visual acuity is not a binary of present/absent but a “spectrum of variation” (Kleege, 2017, 448). The low-vision user is not a checkbox, persona, or bulleted list of guidelines for designers about color contrast, white space, responsive design, and navigation. Instead, a paradigm based on the portability and variability of individual preferences can potentially benefit everyone regardless of ability, which is the promise of universal design and a more robust paradigm than one based on assumptions about a narrower population of nondisabled or “default users.”

The default user is implicitly able-bodied. When research articles refer to “our students” or “the users,” they usually assume—and expect readers, who are themselves inscribed in the text as able-bodied, to assume—that these subjects are able-bodied. Normalcy is typically inscribed, ingrained, unchallenged. It goes without saying. Default, able-bodied users are unmarked: they are simply “users.” Users with disabilities, by contrast, are typically marked. They are marked in language—consider the ongoing debate over

people-first vs. identity-first language—but also marked as special journal topics or issues. Lennard Davis (2017) describes recurring references to disability in Conrad’s *Heart of Darkness* as “tics” that patrol normalcy (p. 11)—an apt metaphor, perhaps, for thinking about where (and how often) disability or the critique of compulsory able-bodiedness appears in our journals. What passes for “normal science” in our field? Which bodies are, by default and through privilege, unmarked? If access barriers are “often unnoticed by those whose bodies, minds, abilities, and resources allow them to occupy the role of default user” (Yergeau et al., 2013), then how can we help these users to notice barriers and do something about them? In short, how can we disable technical and professional communication (cf. Vidali, 2015; Yergeau, 2011)?

Even as accessible design becomes indistinguishable from good web design (“one site for all”), significant access barriers remain unnoticed today. For example, very few images uploaded to social media are fully accessible to blind, low vision, and other users who rely on text descriptions of those images. This especially includes “images of text,” which are images with writing on them, usually short quotations. On Twitter, the practice of sharing images of text has been called *screenshorting* (Honan, 2014), “in which users post photos or screen captures of blocks of text as images embedded in a tweet” (Ringel Morris et al. 2016, p. 5507). Because the words in a *screenshort* can’t be easily tracked or indexed by search engines, they can support subversive motives, such as “making it more difficult for government regimes to track who is supporting various ideologies” (p. 5507). I suspect the popularity of images of text also has to do with the ease with which sighted users can capture a pithy quote with a screenshot, and then copy or drag it into Facebook or Twitter. An image of text doesn’t count against character limits on Twitter either.

But what makes *screenshots* attractive to presumably sighted users also makes them inaccessible, because screen reader programs, which provide nonvisual access to the web for some blind and low vision users, cannot process writing that is part of an image. The visual styling of text in an image also can’t be changed to meet the needs of some low vision users for specific color, size and typeface combinations. According to the Web Content Accessibility Guidelines (World Wide Web Consortium, 2018a), images of text should be avoided unless the image is a logo. They can be made accessible to screen reader users, however, if the contents are transcribed in writing. On Facebook and Twitter, *screenshots* and memes (with meme text) are popular, at least from my perspective as a sighted user who monitors the alternative text (or alt text) in my social media feeds. It’s unclear whether social media users are aware that images of text are not screen reader friendly (in the absence of a text transcription), or that every image uploaded to social media needs to be described. (Alt is an attribute of the image tag in HTML. Screen reader users can listen to the alt text descriptions associated with each image, when alt text is present.)

Social media are dominated by images and video, so it may surprise some sighted users that nonvisual access is needed or desired on a platform built around seeing. After all, Facebook originated as a web service to allow Harvard students to rate what they see—i.e. the visual attractiveness of other students (Hall, 2018). But Facebook is a global company today. The best reason, I think, for being mindful of social media accessibility—and for reimagining notions of audience with our students and colleagues—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):

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). Today, the problem of inaccessible images on social media—that is, images with no descriptive alt text—is not a technical one. There is no technical barrier to image description on Facebook or Twitter; user interface support for alt text was integrated into both platforms in 2016 (García, Paluri, & Wu, 2016; Yeung, 2016; see also Sethuraman, 2014). The barriers to image description on social media are cultural and social. To remove these barriers, we need a different image of the user.

If the image of the default user is a byproduct of ableist—and especially “sightest” (Kleege 2017, p. 445)—assumptions, then a reimagined user in technical and professional communication begins not with normalcy but difference, diversity, and disability. Lennard Davis's (2006) “dismodernist” critique of postmodern identity politics dismantles and reimagines identity at “the end of normal” (Davis, 2013). “Difference is what all of us have in common,” Davis suggests (2006, p. 239). Difference is rooted in one of the “universal[s] in life”: “the experience of the limitations of the body” (p. 241). Under dismodernism, “all humans are seen as wounded” (p. 241); “[i]mpairment is the rule, and normalcy is the fantasy” (p. 241). If the “dismodernist subject is in fact disabled, only completed by technology and by interventions” (p. 241), then the appropriate response is an ethic of care “about the body” that, according to Davis (2006), values human rights and civil rights for people with disabilities, care for the poor, prison reform, and a commitment to helping vulnerable populations impacted by globalization and war (p. 241). Davis also emphasizes the goals of barrier-free access and universal design, referring to the latter as a “template for social and political designs” (p. 241). These goals are

likely to resonate with technical communicators who practice and teach universal design, web standards, plain language, social justice, and more. What Davis offers is a way of centering difference and disability by challenging the fantasies of normalcy, independence, and autonomy that reinforce false binaries. Breaking down these divisions in the technical communication classroom is key: “Although teaching about assistive technology and Web standards is an essential step in increasing access, we must begin to trouble the binary between normal and assistive technologies. Challenging the naturalization of conventional ableist technologies, we should teach students to view all technologies as assistive” (Palmeri, 2006, p. 58).

When we de-naturalize technologies, critique practices (such as screenshorting) as ableist, and disable the default user, we generate new insights that have the potential to transform the knowledge and practices of our field. To be clear, Davis's critique of postmodern identity politics does not mean that everyone should claim disability now. Rather, as Davis (2006) puts it:

dismodernism argues for a commonality of bodies within the notion of difference. It is too easy to say, “We're all disabled.” But it is possible to say that we are all disabled by injustice and oppression of various kinds. We are all nonstandard, and it is under that standard that we should be able to found the dismodernist ethic. (p. 241)

A nonstandard user needs a nonstandard discipline. It is no longer enough for scholarly journals to produce open access PDFs that are closed to every basic accessibility feature save optical character recognition. (Accessible PDFs also need alternative text descriptions for images, semantic tagging, correctly marked up reading order, and other features that the Adobe accessibility wizard can check and help fix if necessary.) It is no longer enough for researchers to study accessibility (or social justice) professionally while implicitly supporting a culture of inaccessibility on social media by posting or commenting on non-described personal photos, memes, videos, and images of text. It is no longer enough, put simply, to write for and about a standard default user. Access is our collective responsibility.

COMPOSING DIGITAL ACCESS

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). 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).

This special issue has its origins and futures elsewhere. Instead of rhetorics of pathology and impairment, instead of the objectification that fuels “inspiration porn” (Young, 2014), instead of unconsciously centering default users, this special issue asks us to reimagine disability in our practices, pedagogies, and theories. 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).

This new perspective can be generative for technical and professional communicators. 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 multimodal 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). Surprisingly, reading speed has received little attention in our field outside of primary school contexts. Driven by the preferences and abilities of caption viewers, especially viewers who are deaf and hard of hearing, new theories of reading speed can be integrated into research studies on how audio, video, and text (on-screen titles, text annotations, captions) intersect and overlap for diverse users. Moreover, studies of film space 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. With their expertise in usability, including user studies and eye tracking, and new theories of DeafSpace and crip time (Samuels, 2017), technical communicators can be at the forefront of studies of reading, timing, placement, and design in multimodal composition.

When we approach accessibility from the bottom up, when digital access is integrated and baked-in, we establish new directions and futures for the field. In caption studies, for example, we usually take for granted that words are good enough substitutes for sounds. As I wrote in *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). 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: 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. For example, the captioned lullaby sung by ghostly children in a horror movie might literally materialize out of the smoky ether. The sustained heartbeat sounds in a training video or tense movie scene might be visualized as an electrocardiogram readout in the corner of the screen. 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. 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 our field’s interests in visual rhetoric, multimodal composition, data visualization, and sound studies.

Experimental captions offer new possibilities, but they aren’t intended to supplant the power and efficiency of words to create accessible content. 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.” Technical and professional communicators 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.

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 (Google’s autocaptioning on YouTube), describing images (Facebook’s automatic alt text), creating accessible PDFs (Adobe’s accessibility wizard), writing and designing inclusive documents (Microsoft’s accessibility checkers for Office), serving content with learning management platforms (Ally for Canvas and Blackboard), and automatically checking websites against a set of accessibility standards (WebAIM’s WAVE, the Siteimprove Accessibility Checker, and many more). 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.

Since 2016, Facebook has been generating “automatic alt text” by applying object recognition technology to the photos uploaded by users (Wu et al., 2017). Facebook’s algorithm generates alt text based on three categories: “people, objects, and scenes” (García, Paluri, & Wu, 2016). A fourth category, actions, was added in 2017 (Candela, 2017). An example of auto alt text for a photo in my Facebook feed is: “Image may contain: grass, tree, sky, outdoor and nature.” An example of auto alt text for a screenshot quote (image of text) in my Facebook feed is: “Image may contain: text.” The Facebook software produces a partial inventory of objects in each image but lacks a deeper rhetorical awareness of the image’s purpose and how it works with the surrounding contexts to make meaning. Alt text is not a list of objects, just as closed captioning is not a list of sounds. 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. Image accessibility in the face of AI and automation needs, at the very least, to be evaluated by humans who can more effectively place images in their rhetorical contexts.

Image recognition technology is improving, but TPC practitioners and scholars 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).

IMAGINING DIFFERENT DISABILITY FUTURES

The three articles in this special issue offer new perspectives, collaborations, and avenues of research. In “Cultivating Virtuous Course Designers: Using Technical Communication to Reimagine Accessibility in Higher Education,” Sherena Huntsman, Jared Colton, and Christopher Phillips draw on virtue ethics to reconceive accessibility as a “habitual practice, part of one’s character.” Reporting on the results of an instructor survey, they explore the contours of an ethics of courage and justice for accessible course design. They also discuss the origins and goals of their “university partnership,” an exciting research collaboration between academics (Huntsman, Colton) and their campus’s IT accessibility coordinator (Phillips). Their partnership offers a new model for and a challenge to other higher education stakeholders to pursue collaborations between faculty and disability support staff.

In “Theorizing Lip Reading as Interface Design: The Gadfly of the Gaps,” Kevin Garrison develops a theory of lip reading that challenges fundamental concepts and binaries. Lip reading, Garrison argues, is not reading at all. A literacy of lip reading is predicated on rhetorically filling in gaps, not decoding information. Lip reading is contextual, synthetic, and dialectical. Garrison contrasts lip reading literacy with orality and print literacy, and briefly applies lip reading concepts to interface design. Lip reading is a new avenue of research for technical communication that offers a more nuanced and complex picture of communication and interface design.

In “Designing for Intersectional, Interdependent Accessibility: A Case Study of Multilingual Technical Content Creation,” Laura Gonzales links the topic of multimodal access to language diversity, offering new challenges for accessibility in TPC. Gonzales explores how the creative, embodied, intersectional work of translators can be effectively subtitled as they converse about their work in multiple languages. How multilingual speech can be made accessible to viewers (some of whom may be monolingual) is a complex challenge that requires new, creative solutions.

Disability studies offers ways of moving and thinking differently in the world for practitioners and scholars. By defining disability studies as a critical methodology “rather than a subject,” Julie A. Minich (2016) shifts the frame to include “not bodily or mental impairments but the social norms that define particular attributes as impairments, as well as the social conditions that concentrate stigmatized attributes in particular populations” (para. 6). Minich (2016) provides a few examples of “topics for disability scholarship...that have been inconsistently or only recently recognized in the field”:

fatness, STDs, mood disorders, addictions, non-normative family structures, intimate partner violence, police brutality, neurological differences, pregnancy, cancer, aging, asthma, and diabetes, to name just a few. And I must emphasize that this scrutiny of normative ideologies should occur not for its own sake but *with the goal of producing knowledge in support of justice for people with stigmatized bodies and minds.* (para. 6)

TPC scholars, especially rhetoricians of health and medicine, are already actively engaged with many of these topics, even if they are not all drawing on a disability framework. But the specific topics matter less than what disability studies offers as a methodology—that is, grounding practice and theory in a critical orientation towards social justice. Jina Kim (2017) explains that Minich’s (2016) disability methodology is “not attuned to the same questions of representation and legibility—what can currently be recognized as disability—but rather to the systemic de-valuation (and oftentimes, subsequent disablement) of non-normative bodies and minds” (Kim, 2017, para. 1). For the field of technical and professional communication, a disability methodology can help reframe digital access as a civil right instead of a mere legal obligation. Through the “scrutiny of normative ideologies,” disability studies in technical and professional communication can explain how ableist practices are normalized but also how we can work together for a more accessible future.

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A NOTE ON ACCESSIBILITY

The issue’s contributors carefully prepared their Word documents to be accessible when converted to PDFs by including alt text for figures and semantic tagging for headings. Access to these features was lost when the Word files were formatted to the journal’s specifications. As a workaround, I integrated authors’ alt text into their figure captions. If any reader would like to receive versions of the articles from this special issue that have been optimized for screen reader accessibility, please contact Sean Zdenek (zdenek@udel.edu).

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Cultivating Virtuous Course Designers: Using Technical Communication to Reimagine Accessibility in Higher Education

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ABSTRACT

Technical communicators are often charged with creating access to meaning through technology. However, these practices can have marginalizing effects. This article argues for reimagining accessibility through virtue ethics. Rather than identifying accessibility as an addition to document design or a set of guidelines, virtue ethics situates accessibility as a habitual practice, part of one's character. This article describes the application of virtue ethics in a university partnership, which sought to create a culture of accessibility through three goals: to consider accessibility as an on-going process, to consider accessibility as a "vital" part of all document design, and to recognize accessibility as a shared responsibility among stakeholders. Focusing on the virtues of courage and justice, we interpret data from a survey of instructors and then provide suggestions on how others can join the accessibility conversation.

INTRODUCTION

Technical communicators are often charged with creating access to meaning through communication technologies and strategies (Conners, 2004). However, technical communicators can easily contribute to marginalizing effects, as "access" has historically been normalized around the assumptions of able-bodied users. All too often when accessibility is considered, it is viewed only as an act of legal compliance and as an additional service to accommodate people with disabilities (Zdenek, 2015; Dolmage, 2017). This assumption is absent of the awareness that all bodies rely on technologies, all technologies are assistive in some manner (Palmeri, 2006, p. 58), and all of us are interdependent with others in some way to access information (Meloncon, 2013b; Elmore, 2013). However, the field of technical and professional communication (TPC) shares common commitments with disability studies (DS) to address such issues.

Broadly considered, both fields investigate the power of words and how they function to normalize, include, and exclude bodies from communication systems (Linton, 1998; Davis, 2010; Siebers, 2008; Meloncon, 2013a). DS and TPC both recognize disability as a social construct of oppression not located in the individual body but as a product of design structures and built environments (Siebers, 2008; Walters, 2010; Meloncon, 2013a; Palmeri, 2006). TPC has made a turn of sorts, to consider disability and accessibility as vital elements of our field (Meloncon, 2013a), and efforts have been made to consider individual disabilities such as low vision and hard of hearing (see, for example, Walters, 2010). While this specific work is important, the knowledge shared with DS coupled with TPC's interest in usability and user experience makes TPC uniquely situated to help cultivate academic cultures that recognize accessibility beyond legal accommodation, beyond an "add-on" for students who have disclosed a disability. The main goal of this article is to suggest ways for doing this more holistic work.

Institutions grapple with increased pressure to address accessibility for students with disabilities, but too often the imperative to provide accommodation comes from a legal risk management perspective, which functions by retrofitting past practices to meet

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accessibility standards rather than an ethical imperative to provide more inclusive educational environments in general. To be blunt, accommodation does not equate to accessibility; accommodation “cannot promise anything like actual, real access” without isolating the student within ableist environments (Dolmage, 2017, p. 79–80). However, many instructors begin and end their knowledge of accessibility with a notification from their institution for a specific action to be taken as a legal accommodation for a specific student (Oswal & Hewett, 2013). This reactionary method of accessibility views students with disabilities as “monoliths who can be cordoned off into one campus corner with Disability Services” rather than equal participants in the learning environment (Oswal & Meloncon, 2017, p. 72; see also Colton & Holmes, 2018). Disability scholars have argued against this view of accessibility, as it tends to consider closed captions, accessible PDFs, audio descriptions, and other accessible design practices solely as “add-ons,” “burdens,” or “extra work” rather than as significant parts of media production, document design, and instructional practice (Robert, 2006; Jarrett, Redish, and Summers, 2013; Pass, 2013; Zdenek, 2015).

We agree with Oswal & Meloncon’s (2017) observation that educators “have a responsibility to conceptualize an accessible course design . . . that reflects the differences of its users” (p. 64). To truly advocate for students, instructors do not need to be experts in accessible design strategies but should take an active role with institutional partners to impact practices and policies (Oswal & Hewett, 2013). The framing of the accessibility discussion and who is involved can have a significant impact on how effective implementation efforts are. When technical communicators consider accessibility, it is important to recognize there are multiple stakeholders invested in the process and the different access needs of all bodies across the ability spectrum (Pass, 2013; Oswal & Meloncon, 2017).

To begin these important conversations and to create the kind of culture that considers accessibility beyond reactive accommodation, the authors of this article—a PhD student researcher, an accessibility coordinator, and an assistant professor of technical communication and rhetoric—have started to develop a university coalition committed to goals of broadening accessibility views and practices across our campus. These goals include continually addressing practical course design, developing collaborative knowledge, and inviting voices from across the university to the conversation. No single perspective on accessibility can address the extensive changes needed to alter long-held and institutionalized able-bodied assumptions and habits.

While paying attention to the creation of and adherence to policies and laws is important, we feel that to cultivate a culture of accessibility in higher education, instructors must acknowledge and habituate accessibility as integral to their pedagogies. To make this argument, we draw on the virtue ethics tradition because of its emphasis on cultivating new ethical habits and recognizing morality in one’s disposition, one’s character and identity, one’s repeated practices.

In what follows, we first discuss key elements of virtue ethics and why this framework informs our project. Specifically, we focus on the virtues of justice and courage. We then address our individual experiences in our individual voices: how we came to be invested in accessibility, and how the virtues of courage and justice have played a role in moving each of us to be vulnerable and take risks. Following these sections, we form a collaborative view in a

discussion of the unifying questions and processes that started this coalition. Here we include some of the results of an IRB-approved survey of instructor opinions and practices regarding accessible course design. Even if some instructors do not consider themselves technical communicators, they do technical communication work when designing syllabi and assignments. This study asked, tacit with the virtue ethics tradition, about the attitudes, behaviors, and habits of instructors regarding accessible course design. We close with a discussion of the benefits of our partnership and ways to invite others to join the accessibility conversation. Keeping with the language of virtue ethics, we suggest some starting points—assignments, supplemental materials, and general good practices—for developing the kind of higher education culture that treats accessibility as crucial to course design.

VIRTUE ETHICS AS A FRAMEWORK FOR CULTIVATING A CULTURE OF ACCESSIBILITY

Virtue ethics is the tacit framework we have been working from to inform this coalition-building and the larger work of enculturating accessibility in our institution. Broadly considered, virtue ethics rejects relying solely on rational principles, universal maxims, or the kinds of means-ends thinking that are often the “go-to” for policy-making. Such maxims might include “caption all videos at our university,” but as Zdenek (2015) has convincingly argued, just checking the box of “adding” closed captions does not mean those captions will be produced with the rhetorical awareness needed to give caption viewers a comparable viewing experience. While principle-based, rule-bound decision-making is important for institutional change regarding accessibility, virtue ethics differs in that it prioritizes the moral dispositions that individuals develop through their daily practices. Rather than solely deciding upon the best institutional rule to abide by, a virtue ethics framework works to produce the conditions where ethical habits and dispositions—such as patience, empathy, humility, and generosity—can be cultivated in individuals and communities. This focus includes examining affordances and constraints that can help shape the ethical habits of an instructor or course designer, creating an environment where it is easier for individuals to choose a path they value.

Virtue ethics is historically interested in the cultivation of moral dispositions (Duffy, 2014) toward human flourishing (*eudaimonia*). Most virtue ethics scholarship is informed by Aristotle (1984), Kongzi (Confucius, 2001), or Buddhist thought (see Keown, 1992). However, contemporary thinkers such as Vallor (2016), Nussbaum (2016), Merriam (2010), and others have made important contributions, including convincingly reimagining and updating virtue ethics to rid the framework of Aristotle’s ableist, sexist, and racist views—see in particular Merriam’s (2010) argument for rehabilitating virtue ethics for disability studies. Virtue ethics is invested specifically in cultivating those particular dispositions—which are manifest in one’s attitudes, habits, and general behavior—that guide actions in contingent rhetorical situations. A virtuous disposition is most often discussed as a flexible ethical middle space on a spectrum between two vices. On one end of the spectrum is a lack of the virtue and on the other an excess. For example, someone inhabiting the virtuous middle space of patience will not wait too long to make crucial decisions (a vice of excess patience), nor will she unnecessarily rush to judgment (a lack of patience). Rather than only seeking universal maxims that might claim to determine all decision-making across a wide variety of

accessibility contexts, virtue ethics argues for developing certain moral habits that are conducive to producing accessible courses and building coalitions, even as policies might change.

Two important virtues are justice and courage. Though varied in their interpretations, both Confucian and Aristotelian virtue ethicists have argued that justice is a crucial virtue for any community. While not unrelated to or uninterested in liberal theories of justice, which tend to view justice as the fair redistribution of resources or how one should be treated (Colton & Holmes, 2018), virtue ethics views justice as an active character trait or habit of a person or community: how fairly or justly one continually treats others in everyday actions (Aristotle, 1984, 1129b27).

Thus, a person who has cultivated the virtue of justice with regards to accessibility would not find injustice solely in the fact that videos have not been captioned or that a digital syllabus does not have accessible headings. Yes, such a person would discover injustice in these facts and would seek to rectify these issues as soon as possible; however, she would also likely focus her energies on how she can intervene in ways that cultivate better habits of accessibility in the video producer or the course designer. In such a scenario, justice would be found in human dispositions, as manifest by the individual and communal habits that lend themselves to accessibility—for example, rhetorically captioning all significant sounds in videos (Zdenek, 2015), using structured content in syllabi (Jarrett, Redish, and Summers, 2013), making sure PDF documents can be read by screen readers (Palmeri, 2006, p. 58), and just as important, being aware that accessibility is an ongoing process. A just disposition is not cultivated by simply adding up these individual practices; rather, such practices must be repeated alongside the practice of self-examination (Vallor, 2016) so that one can adjust those practices as differing contexts demand. Virtues are dispositional, part of one's character, and not just rote habits. For example, cultivating the virtue of justice as accessibility is incompatible with an able-bodied perspective. In sum, instead of making accessibility an add-on only to be considered a part of institutional redress for legal accommodation, a person inhabiting the virtue of justice as a course designer will transform their pedagogical toolkit to one based upon accessibility.

Cultivating a sense of justice in oneself, let alone in one's colleagues (course designers, etc.), is a challenge and can feel daunting. *How do I habituate accessibility as an instructor, when I don't even know where to start?* Getting started requires courage, a disposition that virtue ethicists also have discussed historically at great lengths. Aristotle described courage as a flexible disposition between cowardice and rashness. He defined courage as the virtue that fears "the right things and with the right motive, in the right way and at the right time" (Aristotle, 1984, 1115b15-20).

Kongzi better focuses that attention on "right things" and "right motive" by arguing that the virtue of courage is never a disposition that one can cultivate on one's own but only in the context of and in support of moral rightness (Confucius, 2001, 9: 29, 14: 28, 17: 23). In other words, Kongzi differentiates moral courage from martial bravery. One need not be a hero in battle to embody the virtue of courage. A technical communicator can embody the virtue of courage, for example, in calling out an employer's use of misleading data in a document. Important to developing courage is a willingness to be vulnerable. Contemporary virtue ethicist Shannon Vallor (2016) articulates courage as a moral disposition in this way: "Courage demands positive perseverance in one's active

and hopeful pursuit of the good, and forbearance and patience in enduring the pains and losses inevitably associated with this lifelong pursuit" (p. 130). When applied to accessible course design broadly, we might imagine the courageous instructor as someone who recognizes that to help cultivate a culture of accessibility (in her program, department, or institution), she will have to be vulnerable to criticism and take risks, including the risk of reaching out and relying upon others—others who will fail at times. Such courage will make her vulnerable to mistakes and to setbacks, but this courage will also help her accept the long game of proactively working to make accessible course design part of her pedagogy and broader institution curricula.

In the narratives that follow, we (the authors) describe our experiences coming together to highlight both our individual struggles and frustrations, as well as our work to support each other in working on the virtues of courage and justice. In doing so, we hope to focus more on the value of our willingness to share our challenges and be vulnerable than any inherently exemplary characteristics. It is our hope that similar conversations will be had on any campus where individuals are willing to come together and work on cultivating a culture of accessibility.

DEFINE THE PROBLEM FROM THE THREE PERSPECTIVES

Jared Colton (Assistant Professor)

In the summer of 2014, after I received my PhD and began my career as a tenure-track professor of technical communication and rhetoric at Utah State University (USU), I attended the Rhetoric Society of America Conference in San Antonio. Object-oriented, nonhuman, and technological rhetorics were all the rage then (and still are, in many ways), so I decided to attend a panel on machine rhetorics. There were some prominent scholars on that panel, but the one who made the greatest impact on me was Sean Zdenek. His argument—that the most marginalized population in the United States is people with disabilities and that rhetoricians invested in technology could do something about it—resonated with me. As a result, I decided to incorporate disability studies and accessibility into one of my first courses at my new job.

Needless to say, and for any teachers who remember the first time they brought disability and accessibility into the classroom, there were some successes but many failures. I created the course with a service-learning component in which the students would produce captioned videos for various community groups invested in people with disabilities, and my sense of what my students could accomplish and the expectations of the groups I worked with were so far from reality that I doubt any of the organizations still use the videos my students made that semester. Even though the student projects failed in that sense, my interest in getting students to work on accessibility projects in technical communication courses made some minor news in the university community. Shortly after that, newly hired Accessibility Coordinator, Christopher Phillips, reached out to me in an email, saying that he had heard I was doing some accessibility in my courses and wanted to know if we could meet to discuss some ways to improve what I was doing. Of course, I immediately froze. I had been found out as a fraud. Beyond some disability in my family that seemed unrelated to the kinds of technical communication I was teaching and studying, I indeed felt very vulnerable, like a fraud, and this expert on disability was going to expose me for who I was.

Christopher Phillips (Accessibility Coordinator/Institutional Support)

As a campus Electronic and Information Technology Accessibility Coordinator, my role is to encourage increased accessibility across all campus digital experiences at USU. As a sibling to two brothers with disabilities, I have always been aware of the need to reduce barriers to access as a basic human right. In a higher education environment, a primary challenge has been understanding how we can instigate sustainable change by helping faculty and staff prioritize accessibility given their already heavy workloads. While reactive accommodations for specific students are generally addressed as needed, it has been more difficult to effect change in proactive efforts to increase accessibility and usability for all students and reduce the number of individual accommodations needed.

Given the scarcity of funding and resources, identifying where to focus my efforts has been paramount. I've needed to understand what training, tools, and support faculty need to create more accessible online experiences. Beyond anecdotal experiences, I initially didn't know much about the attitudes or awareness of our faculty towards accessibility and was nervous to ask already busy professionals to add one more thing to their plate. As I understood the challenges that existed around creating more accessible online course experiences, the task felt overwhelming. I was unsure of how I could effectively communicate the value and opportunity of accessibility. I hoped to make change on campus that would go beyond fear-based threats of legal compliance and towards internal motives to create more inclusive and engaging experiences and was at a loss of where to begin.

Finding others on campus with an interest in accessibility was a priority, but I struggled to identify who those accessibility champions might be. Unfamiliar with the field of technical and professional communication, I was surprised to hear about a course being taught in the English Department on digital accessibility and reached out to Colton. While waiting for a response, I heard from Sherena Huntsman, a PhD student researcher from the English Department, who was also doing work in the area of accessibility. I was excited to have some allies from an unexpected source and to feel like I wasn't quite so alone in laying the foundation for a more accessible campus.

Sherena Huntsman (PhD Researcher)

My journey to our partnership began the first time I opened a PDF file as part of my course readings and could not highlight a passage on the page because the file was not text but an image. As a sighted person, I could read the document regardless of the format, but I knew this wasn't an option for everyone. It seemed unfair, and I questioned how a student using a screen reader would access the same document. My awareness of accessibility and my course work in technical communication design principles led to the intersection of technical communication and disability studies. Because of my growing interest in accessibility, I wanted to grasp how bodies use multiple methods to access information. I then spent a year working with people with disabilities as part of my introduction to disability studies. These interactions helped me recognize that diverse access is not always considered when designing digital materials, which I consider to be unjust.

My observations motivated me to research the accommodation process offered through the Disability Resource Center on campus. Through this process, students receive course documents retrofitted

to meet their specific access needs. Although this system is important, I learned it is often overrun with requests, which create delays for students. My visit also taught me that retrofitting course materials takes a substantial amount of resources, and not all materials can be retrofitted in a timely manner.

I left the Disability Resource Center determined to find a more proactive method for designing equal access to course materials for all students. I turned to the Center for Innovative Design and Instruction (CIDI) and Phillips's office. I wanted to investigate how instructors could design digital course documents with diverse accessibility in mind. I knew CIDI worked with instructors throughout the course design process, and I hoped their relationship with instructors could help inform my questions. However, I felt inadequate and vulnerable because I worried my research interest would not align with CIDI's interests and my inquiry would feel intrusive to Phillips's workload rather than beneficial. In spite of my fear, I pursued the partnership because I hoped it could lead to equality.

Coming together

In retrospect, we feel fortunate to have come together, given the distinct problems we were each trying to address. Initially, there was hesitation from each of us. No one actively seeks to increase their workload or be exposed to critique. Thus, we tentatively explored the interests and goals the other people brought to the conversation. We all felt vulnerable in this collaborative space (see above regarding vulnerability as necessary for courage), but we also shared a similar sense of justice, which gave and continues to give us courage to continue even in the face of multiple failures.

Our individual goals, broadly stated, included the following:

1. Colton: Enable technical communication students to recognize the marginalization of disability communities and provide real-world experiences for those students to do meaningful accessibility work.
2. Phillips: Increase the awareness of accessibility on campus and the availability of more accessible course materials across all courses.
3. Huntsman: Determine how technical communication skills can help instructors proactively create more accessible digital course materials.

Our initial conversations were tentative, each of us unsure of how a partnership would be able to support our individual goals. Those concerns were soon alleviated in recognition that our individual efforts would be amplified by working together. We began to realize our ambitious goals could not be accomplished without the help of others, and in the process of accomplishing our own goals we could also envision ways to work toward changes more broadly at our university.

WORKING AS A COALITION

Despite our shared interest in accessibility, we all approached the challenge from different perspectives. We realized that working together would require taking on work outside of our traditional wheelhouses and exposing our own ineptitude in certain areas. Though we had limited resources and felt overwhelmed at times with the requirements of accessibility, we discovered shared goals that have enabled us to approach the conversation through collaboration, easing each other's burdens in the process.

First Common Goal: Understanding Accessibility as a Process, not a Checkbox

We view accessibility as a process rather than a checkbox. Accessibility work is rarely a “yes or no” initiative where a box is checked to declare something is now accessible. Any individual action, such as including descriptive alt texts to images, may improve accessibility for some students but not for others. Although a checklist can make it easier to measure accessibility, and there are helpful tools to support this work, such a list does not ensure access for all students (Oswal & Meloncon, 2017). One has only to scan studies of different disability populations, from those with visual disabilities (Leuthold, Bargas-Avila, & Opwis, 2008; Theofanos & Redish, 2005) to aged populations (Lippincott, 2004; O’Hara, 2004) and more to acknowledge this challenge. Instead, it takes one action alongside other actions in a continuous process of working toward accessibility. We must value each action; an effort is not dismissed because it is incomplete or does not meet everyone’s needs right away. This willingness to act in an incomplete space that might not have quantitative markers of success demands the courage to be vulnerable.

This is not to imply that accessibility work is in conflict with good principles or practices targeting a specific group of individuals. On the contrary, the spirit behind principles of usability and “flexible” universal design (Dolmage, 2017, p.118) can be very helpful to demonstrate how a specific accommodation for one student can positively impact other students with disabilities and more broadly, all users. Considering the impact of specific types of accommodations on different groups of users has been an important consideration in what types of work we prioritize and how we introduce inclusive teaching principles.

Second Common Goal: Making Accessibility “Natural” to Doc Design

We desire accessibility to be acknowledged as and feel like a “natural” part of document design for all instructors and students on our campus. In contrast with this ideal, most of the work around accessibility at our institution happens through our Disability Resource Center and a collection of grant projects on campus.

Institutions often defer to legal ramifications, policies, checklists and guidelines to enforce accessibility. Our experience has been that compliance-focused approaches are less effective at helping instructors see the value of inclusive design. When instructors ask to meet a policy requirement without understanding the value they are creating, specific tasks can quickly be completed and forgotten. For example, one instructor interviewed as part of an ongoing study (USU IRB #9001) specifically discussed how their documents were altered for a specific student with an accommodation from the Disability Resource Center. With appreciation, this instructor wrote about creating closed captions to their video lectures for a Deaf student taking an online section of the course. However, when asked if they had considered or applied closed captioning to any other course videos or any other lectures, they offered a hesitant negative reply. The accommodation policy and the instructor’s responsibility to accessibility were fulfilled, but these policy-controlled actions create gaps in application, as they limit one’s scope of attention, and the policy cannot always address every possible scenario. Without an alteration to the underlying motives behind the actions, there is no habitual or long-lasting change.

Third Common Goal: Spreading the Discussion of Accessibility

We want accessibility to be part of a larger conversation among stakeholders at our university. Accessibility is not an issue for just the institution or the individual instructor who happens to have a student with a disability in a class; making accessibility a part of everyday practice will take a sustained joint effort from many actors. The work surrounding accessibility is a journey that more often than not requires a community, where small efforts toward greater accessibility are encouraged and celebrated, even as we acknowledge that there is always more to do. Individually each of us has been doing important work, but in isolation there are significant limitations. Without the team dynamic of shared challenges and successes, our work was missing key opportunities and insight into work happening in other areas on our campus. Change cannot be solely a top-down policy requirement, nor can it just be technical communicators coming to the rescue of instructors struggling through limited resources of time and knowledge. In order for an accessibility coalition to grow and crossover from technical communication classrooms to the broader university community, we knew we needed to work together and be open to the input of all interested parties.

Huntsman and Phillips

Informed by our common goals, and to begin assessing the attitudes and everyday practices of instructors, Huntsman and Phillips worked on a research project on accessible course materials and what resources were available to support accessibility on campus. This research sought to learn the status of the current culture of accessibility for instructors at our university. The survey questions followed the 2010 Conference on College Composition and Communication Committee for Best Practices in Online Writing Instruction and Oswal and Meloncon’s (2014) study; the latter of which trimmed the data collected from the 2010 CCCC study to an investigation of six questions (three qualitative and three quantitative) that specifically address accessibility. To meet Huntsman and Phillips’ research trajectory, the original questions selected by Oswal and Meloncon were altered to facilitate data collection from a population of instructors from multiple departments and teaching platforms. The survey included demographic gathering questions, four quantitative questions and four qualitative questions. The project took Phillips’s understanding of institutional positions and policies and Huntsman’s work on instructor processes from a technical communication perspective. Together they conducted an IRB-approved (USU IRB #8455) study in which they distributed a survey to university instructors through department heads.

Because of the distribution method, it was not possible to determine how many instructors received the survey invitation from the head of the department. 72 instructors responded. Most participants had taught for the institution for less than 20 years (45 responses) and were over the age of 36 (44 responses). Although instructors from all eight colleges of the university participated in the survey, the majority of responding instructors teach in the humanities and education (40 respondents). While we had hoped for more responses, and the responses received are not scientifically representative of the university at large, this amount did help provide a sense of many instructors’ engagements with accessible course design.

Huntsman first coded the quantitative data from the survey using a holistic method (Miles, Huberman, & Saldana, 2014). This method takes account of the entirety of an individual’s response to

find meaning, seeking out patterns and themes that emerge in the responses. Phillips also coded the data using the same method to ensure the integrity of the findings. Although the survey questions did not use the term “virtues ethics” in the wording, it was within this coding process where the instructors’ ethical habits emerged as a collective theme.

Most of the participants did have experience with the accommodation process. When asked if they had taught a student with a disclosed disability, 90% of the respondents claimed they were aware they had. A brief synopsis of the responses regarding the accessibility of electronic course materials follows (please, reference the complete survey in Appendix A):

- 40% indicated they relied on others (e.g. disability resource center, other instructors, university resource website) to assure accessibility, and (1) acknowledged doing nothing about accessibility and/or (2) not knowing how to make their courses accessible.
- 63% mentioned using multi-modal pedagogical strategies and/or relying on the Disability Resource Center to accommodate individual students with an acknowledged disability.
- 32% indicated their greatest challenges to teaching students with disabilities are the gaps in their own knowledge about accessibility and whether they have achieved accessibility.
- 43% mentioned the need for some level of assistance from the university in the form of greater communication among instructors and institutional resources such as guidelines, checklists, training, and software.
- 82% felt they carried some level of responsibility to make sure course materials are accessible. 40% observed that instructors, institutional resources, and the student—all choices given in the survey—share responsibility to make sure course materials are accessible.

Survey Findings

Considered in terms of virtue ethics—in particular the virtues of justice and courage—and making accessible course design a part of everyday practice, we viewed the results of the survey as giving some indication of the following:

- Accessibility is valued by instructors as it relates to working with individual students. Instructors appear to value equal access, though if their motives stem from pity for the student with a disability or a sense of social (in)justice, it is unclear. When asked what pedagogical strategies they use to accommodate students with disabilities, an instructor replied, “I extend deadlines, make sure exams aren’t timed and they have multiple chances, and lastly work with disability services to ensure that all the student’s needs are met.” They felt the student could not meet the expectations for the course and altered the expectations. However, a vast majority of instructors demonstrated, if not a clear reference to systemic injustices, then a sense of personal accountability to the problem of accessibility, as they appeared to recognize they have some responsibility in making sure their course materials are accessible to all their students: “I think the most practical strategy is to ask students what I can do to make the best class for them. I try to meet with my students regularly to make sure that I am doing what I can to encourage a positive learning environment.”

- Instructors do exhibit some courage as they make efforts to create access by turning to multi-modality. They value accessibility even if they do not always demonstrate the courage to seek help beyond their own skills. Half of the instructors exhibited a willingness to be vulnerable as they admitted their lack of knowledge and desire to receive help, though the anonymity of the survey may have encouraged some expressions of vulnerability.
- Instructors tend to perceive accessibility as an “add-on” to their pedagogical strategies. Their responses show that they still tend to treat accessibility as an extra, perhaps charitable effort they perform on behalf of the student with a disability. This view indicates that most of these instructors likely have not habituated accessibility as any part of their everyday course design practices.

Though it may seem harsh to say so, misplaced fear might explain why instructors value accessibility but do not act to make their courses accessible unless prompted or compelled by specific accommodation demands. Once they are forced to consider accessibility in their course materials, fear may be replaced with anger. Although most instructors were aware of the resources our university offers, few survey participants indicated using these resources. This lack of proactive outreach might demonstrate that instructors do not view accessibility as an issue of justice in which they should be invested. It may also be similar to Colton’s hesitance to work with Phillips. They might be afraid to reach out for assistance for various reasons, including simply the fear that their workload would increase. However, we hope instructors’ interest in knowing what technological resources are available for accessibility is an indication that some may be open to altering this perspective and changing a few ethical habits.

The survey results indicated instructors need design strategies that are flexible enough to adapt to the unique dynamics of individual classes and individual students. We recognize that to move toward effective design strategies for equal access, there is a need to create a safe environment for instructors to feel vulnerable and to give them opportunities to take risks. We also recognize the benefits of appealing to their sense of ethical accountability. Although those taking the survey exhibited what could be viewed in a strict sense as a lack of the virtue of justice by thinking of accessibility only in terms of legal accommodation and add-ons, it may be possible to help them recognize that a more just perspective is to consider accessibility throughout the ongoing development of their course materials. This may sound like a lot, and one might hypothetically respond, “who cares if I don’t always consider accessibility in all of my course designs. Isn’t legal accommodation enough justice?” And from a certain perspective—perhaps a notion of justice based upon liberalism (Rawls, 1971; see Colton and Holmes, 2018)—legal accommodation is enough, but such a view isn’t accurate to life experiences. We all know that contexts change—policies change, students and student populations change, demands change. Cultivating a just disposition entails the ability to recognize an unjust scenario in terms of accessibility even if the current policies do not. Such a shift requires more than a change in ideology; such change also demands addressing one’s pedagogical habits and assumptions.

A quick note: as we analyze the findings of our small study, we also recognize the limitations of the data collected. We did not include information gathered from people with disabilities pertinent to

accessible course design. The survey questions presupposed an able-bodied instructor teaching a student with a disability. And finally, our study did not capture the voice of students with disabilities trying to access course materials, neglecting a current mantra of disability activism (Charlton, 1998), a mistake we plan on rectifying in future studies. We are currently designing related research studies at our university that will include people with disabilities' feedback and other types of participation.

Phillips and Colton

After becoming more aware of the marginalization of people with disabilities, Colton was anxious to bring that awareness to his technical communication students and give them opportunities to make accessibility part of their everyday technical communication toolkit. He also wanted them to do meaningful service-learning work. At about the same time, efforts of accessibility advocates on campus resulted in the creation of a new campus accessibility position into which Phillips was hired. One of his responsibilities was to improve the process of creating accessible courses at our university. After some initial back and forth communications between Colton and Phillips on different accessibility problems, further discussions were shelved because of busy schedules and misunderstandings about the work each person was doing. However, when they finally sat down together it took only a few minutes to break through the ice. Working together seemed a great opportunity to address both people's needs and, in particular, to begin intervening on the level of instructors' and future technical communicators' accessibility habits, as a virtue ethics lens would suggest in its focus on repeating ethical practices toward the cultivation of moral dispositions and greater community flourishing in general.

The partnership quickly bore fruit with an "Intervention" assignment (an expanded version of Zdenek, 2014) in Colton's classes where the students take inaccessible PDF documents and videos from courses across campus and make them accessible. The course is designed around disability studies and history readings and readings on accessibility practices, in particular those related to technical communication (Walters, 2010; Youngblood, 2013; Pass, 2013; Oswal and Hewett, 2013; Zdenek, 2015). In brief, the philosophy behind this assignment is for students to take what they are discussing in the classroom—from theories of disability to specific accessibility practices—and apply that knowledge to real-world scenarios. The assignment also provides students with an awareness of how their fellow students with disabilities are impacted by inaccessible materials, along with basic instruction on how to revise those materials to be accessible.

For one version of the assignment, the instructor identifies university videos without captions (or terrible YouTube algorithmically-produced captions) and assigns one video to each student with the task of creating rhetorically significant captions for that video (Zdenek, 2015). Creating rhetorically significant captions means more than just copying and pasting dialogue; rhetorically significant captions demonstrate an awareness of intertextuality and might include non-speech information that captures irony, silences, ambient sounds, and other elements (for more on rhetorically significant captioning, see Zdenek, 2015). In another version, each student is given an inaccessible PDF file they then revise into an accessible HTML page. Each assignment is reviewed by a peer and then revised again. The accessible version is published back to the original course or media platform to provide a more accessible experience for anyone who uses that video or reading in the future.

While the modest initial scope of the assignment was to help students gain some practical experience in applying what they were learning from the class, the outcomes of their work are already impacting conversations and processes beyond each individual accommodation. One example of this impact has been a change in our campus Disability Resource Center's process to provide accessible materials to students, including converting PDF files to more accessible and usable formats that benefit all students. Additionally, instructors on campus have heard of the work we are doing and are asking how similar practices can be implemented in their courses in order to create accessible learning experiences in a more proactive fashion. Conversations have opened up around accessibility with video producers who have become aware of the importance of captioning for the first time, and work toward implementing principles of accessibility into the design of introductory composition courses has begun.

Beyond the institutional changes and conversations, many of the students in the course came away from the assignment with a change in their outlooks about disability and accessibility. As evidenced by Colton's course evaluations and the students' assignment reflections, the students were committed to make accessibility an important part of their future technical communication practices.

Colton (Assistant Professor)

Perhaps it is needless to say, but I am much more confident in sharing my knowledge and practices regarding teaching and implementing accessibility in the classroom, while at the same time knowing I still have a lot to learn. Beginning this coalition with Huntsman and Phillips has produced a network node, per se, and now students interested in disability—not necessarily in my department or program—are seeking my guidance on their research projects. We are also developing a Disability Studies minor at USU, and I was invited to be on the organizing committee. I doubt these kinds of things would have happened at the current rate they are happening, or at all, if Phillips and I had not each been willing to be vulnerable, share our very different expertises and experiences with one another, and work toward a cultivating a common sense of justice together. There is still so much work to be done, but this coalition has emboldened me personally and given me the ability to think much bigger and work toward a long-term goal of cultivating a culture of accessibility at USU.

Phillips (Accessibility Coordinator/ Institutional Support)

When it comes to accessibility there is always more that can be done, but there is also always something you can do today. Understanding how accessibility can align with specific virtues that many instructors already value has provided new and expanded opportunities to provide support in ways that are more meaningful and motivational to faculty audiences.

Prior to this collaboration I had little awareness of the discipline of technical communication, much less the conversations happening around disability in that field. In working with Huntsman and Colton and students from his classes, I now see tremendous opportunities for the field of technical communication to make significant contributions in both the theory and practice of implementing accessibility in higher education.

Huntsman (PhD Researcher)

Throughout this collaboration I realized there is value in reaching out to others and to ask questions. I understand that I do not have all of the answers to address inclusionary design and accessibility, but no one does, and that is the value of collaboration. Although I entered the collaboration with a heightened awareness of my vulnerability, I recognize this vulnerability gave me the space to embrace other perspectives and that even small moves towards accessibility are important. I needed courage to grapple with my inadequacies and trust my fellow collaborators. My research with Phillips led me to talk to other instructors. As a graduate student, I work with many new instructors both inside and outside of technical communication. These relationships offer the opportunity to share accessibility strategies in casual conversations about course materials and in our graduate instructor meetings. Because of my work with Colton, I now use accessible design strategies such as using style headings and tags and include descriptive text with images to the typical assignment requirements for my technical communication students. The greatest change has come in my willingness to talk about accessibility. I've started to seek accessibility partners everywhere. I find them in my fellow instructors, in my students, and in relationships I form across campus. I realize I can make a difference even if it is one change at a time.

CHANGING PERCEPTIONS OF ACCESSIBILITY THROUGH VIRTUE ETHICS

With an increased understanding of instructor attitudes towards accessibility on our campus and some experience applying accessibility in a service-learning setting, we have moved the discussion towards how we can build a framework that will bring even more people into the conversation. We have been encouraged by some of the data we received from instructors. We also recognize that there are a variety of different motivations and fears to be mindful of as we share our work and begin conversations with other professionals around accessibility.

But how do we take people from where they are and move to a better place? How do we produce lasting change? How do we invite others to the accessibility discussion without inducing guilt or implying demands for perfection? Rather than define a list of right and wrong approaches to accessibility, we imagine a framework

of access to help others become aware of the attitudes that inform their actions and work toward ethical dispositions of justice and courage that recognize accessibility as a vital part of designing course materials.

Changing the perception of accessibility from a limited perspective of rules and policies into a broader shift in ethical dispositions that view accessibility in terms of justice and courage is a challenge. While we do not actually use the term “the virtue ethics” in accessibility conversations we have with others on campus, we tacitly rely on a virtue ethics framework to help cultivate a culture of accessibility in everyday practice.

Application of Virtue Ethics Framework

To this point we have summarized virtue ethics, shared some of our individual thoughts on our coalition, and described a sample of how instructors at our university feel about accessibility. It is helpful to consider how a virtue ethics framework can be applied from the perspective of an instructor, as a flexible heuristic of sorts. Our goal is not to make others feel guilty about a lack of any particular virtue in their pedagogical practices. Critique has an important place in these discussions, and it is important to help people recognize unjust practices, but we have anecdotally found that too much emphasis on critique often cultivates anger and resistance rather than virtues of justice and courage. We want to respect the good intentions and current values of instructors and use self-reflective questions to help them work toward cultivating dispositions of justice and courage informed by accessibility. Again, these conversations sometimes happen without explicitly using the words “justice” or “courage.”

Considering Justice

While virtue ethics theory argues that cultivating any virtue requires the right conditions and multiple approaches, there are questions that can begin the introspective process required for developing a just disposition informed by accessibility. The questions in Table 1 demonstrate the spectrum of the virtue of justice—located in the middle space between the vices of injustice (lack of justice) and policing (excess justice)—in terms of course design. The goal is to inhabit the flexible middle space. We want instructors to be comfortable asking themselves how their own values in equality and fairness are reflected in their practices. Obviously, these questions can be rephrased to better suit different scenarios.

Table 1: The virtue of justice as a middle space between vices of injustice and policing/pity, as applicable to accessible course design.

Virtue	Injustice	Middle Space (Virtue of Justice)	Policing and Pity
Justice	<p>Do I view a need to create accessible materials for a specific student as unnecessary or a burden?</p> <p>Do I rarely if ever consider the needs of students with disabilities when creating course materials?</p>	<p>Do I consider specific challenges that would make it difficult for students with disabilities to be included?</p> <p>Do I create my course materials in a way that demonstrates my belief that all students deserve equal opportunities to learn and be challenged?</p>	<p>Do I find myself policing and criticizing others with regards to their inaccessible course design habits?</p> <p>Do I lower my expectations for students with disabilities?</p> <p>Are my course materials designed to accommodate students with disabilities at the expense of making the experience worse for other students?</p>

Table 2: The virtue of courage as a middle space between vices of cowardice and rashness, as applicable to accessible course design.

Virtue	Cowardice	Middle Space (Virtue of Courage)	Rashness
Courage	<p>Am I uncomfortable asking questions that would expose my lack of understanding of accessibility?</p> <p>Do I find myself avoiding conversations on accessibility?</p> <p>If a student of mine expresses or demonstrates a potential disability, do I do anything about it or wait to hear from official resources?</p>	<p>Do I consider accessibility to be important but also realize my own limitations on what I can do on my own?</p> <p>Am I willing to take chances in proactively making my course materials accessible, knowing I will likely make some mistakes?</p>	<p>Do I feel like I don't need help or input from anyone to make my course materials accessible?</p> <p>In attempting to be generous with my time, am I being self-sacrificial?</p>

A just disposition does presuppose an attitude that all students belong and have an inherent right to be included, though it may look different in different situations. A just disposition should foster a welcoming environment where those around you want to be a part of the conversation rather than fear it. An instructor inhabiting the virtue of justice would not treat students with disabilities as undeserving, nor would they have unreasonable expectations to solve problems of accessibility beyond their capabilities.

Considering Courage

An instructor who has cultivated a disposition of courage will seek out opportunities to make an impact regarding accessibility, and just like the virtue of justice, the expression of courage will look different in different situations: a willingness to take risks without taking on too many responsibilities; an ability to ask for help from others while knowing they will make mistakes; and the courage to gradually learn new course design skills (perhaps abandoning old ones) as a necessary part of being a great instructor. Just like justice above, the questions in Table 2 demonstrate the spectrum of the virtue of courage—located in the middle space between the vices of cowardice and rashness. The goal is to inhabit the middle space, which is not fixed but flexible in response to different contexts.

Toward Accessibility as a Characteristic of Virtuous Course Designers

Most faculty are familiar with the experience of receiving an accommodation request for a specific student, and while this reactive work is essential, it does little to encourage the recipient of that letter to change their current practice beyond waiting for the next accommodation letter to arrive. Helping faculty move to a proactive model of creating accessible course materials has the additional benefit of creating materials that are more inclusive for all learners, including students who choose not to disclose they have a disability. Even when an instructor has a desire to start on the journey of accessibility, it can be difficult to know where to start in their teaching practice. The following list provides some ideas that instructors can begin to incorporate into their practice:

- Reach out to the disability or accessibility office on campus

to express interest in sitting down for a conversation about accessible course materials.

- Identify one thing that you can do to make your course material more accessible (i.e. use styles to incorporate headings in a document) and create your next syllabus or assignment with that practice in mind.
- Share an accessibility principle with students and require it as part of their course assignments.
- Include ableism when teaching about racism, sexism and classism in technical communication courses (see Colton and Walton, 2015). Consider identifying a student with a disability who is interested and willing to help teach these concepts.
- Be vulnerable with your students about your accessibility journey and encourage them to point out when there are problems in your course material.

CONCLUSION

In *Distant Publics*, Jenny Rice (2012) argues that for real social change to occur, we cannot rely on simply exposing problems to people through critique. Though her topic is not accessibility, and she looks to affect theory rather than virtue ethics, she similarly shows that if we are really to cause change (if that is our desire), then we need to intervene on the level of habits (p. 98). According to most virtue ethics theories, one of the key ways to change ethical habits is by looking to learn from what Aristotle (1984) calls “exemplars” and what Kongzi names “*junzi*,” or people who exemplify the virtues (Confucius, 2001, 4:1, 4:25, and 7:22). Technical communicators seem ideally suited to take on this role in the context of accessible course design.

One of the goals of this article has been to demonstrate a couple ways to begin intervening at the level of accessible course design habits, to begin the process of becoming exemplars of accessibility: (1) by discovering the attitudes of fellow instructors, and (2) by strategically making accessibility a key component to projects in technical communication courses. We focused in particular on the

virtues of justice and courage to begin thinking about the exigence to make accessibility a part of everyday pedagogical practice, though many other virtues could and should be considered, such as patience and generosity.

We hope that understanding the ethical imperative for accessibility through a virtue ethics lens enables readers to view themselves— at different times in their lives—on the spectrums of justice and courage; that inhabiting the virtuous middle space does not mean being perfect regarding accessibility; rather, it means working toward being the kind of people who have the courage to self-reflectively ask of themselves if their daily pedagogical practices are representative of their beliefs in equality and inclusivity—and if they are not, to make adjustments. As technical communicators, we often turn to strategies such as Universal Design (UD). UD materials were and are constructed with “rhetorical velocity” from the beginning, so we need to be careful to avoid thinking of them as a checklist of actions without the essential understanding that UD must include the practice of remixing and repurposing to fit the needs of the user (Dolmage, 2017, p. 149). Thinking about the relationship between users and technical communication should remain flexible and UD is best accomplished when grounded in ethical considerations.

One of the great strengths of virtue ethics is that ethical action is never considered a one-and-done event. Cultivating virtues such as justice and courage with regards to accessibility must be considered lifelong processes. If technical communicators are unable to answer the above heuristics in a satisfying way, then we hope they might look to change the conditions so that those virtues can be cultivated. We join with Zdenek (2015) as he envisions a world where accessible design becomes “more natural and less strange, more universal and less marginal” (p. 301). This lofty but noble goal requires that we make a priority even timid efforts toward cultivating a culture of accessibility. To be an exemplar of accessibility does not demand perfection, but it takes a commitment to justice and the courage to reach out to others, to take action, to reevaluate, and to continue attempting to make accessibility an everyday part of our lives.

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APPENDIX A

Instructor Accessibility Survey

Constructed through Qualtrics

Q1 Please, read through the Letter of information. After reading the Letter of Information, do you voluntarily agree to participate in this survey?

- Yes (1)
- No (2)

Q2 Do you currently teach or have you previously taught at Utah State University?

- Yes (1)
- No (2)

Q3 What is your current age?

- 18-35 (1)
- 36-50 (2)
- over 50 (3)

Q4 How many years have you taught classes for the university?

- 1-5 Years (1)
- 6-20 Years (2)
- Over 20 Years (3)

Q5 For which college at the university do you currently teach?

Q6 Have you ever taught students with disclosed or obvious disabilities?

- Yes (1)
- Maybe (2)
- No (3)

Q7 To your knowledge, is your electronic materials (documents, videos, images, etc.) accessible to students with various disabilities (ADA compliant)?

- Yes (1)
- Maybe (2)
- No (3)

Q8 Does your institution provide guidance on how to make electronic course material accessible?

- Yes (1)
- Maybe or I do know (2)
- No (3)

Q9 How important is it to you to see that your electronic course material is accessibility in your course design?

- Extremely important (1)
- Very important (2)
- Moderately important (3)
- Slightly important (4)
- Not at all important (5)

Q10 What actions, if any, do you take to assure your electronic course material are accessible? You may respond with "I don't know" if applicable.

Q11 Who is responsible to see that electronic course materials are accessible for students? Please, select all that apply.

- Course instructor(s) (1)
- Disability Resource Center (2)
- Center for Instructional Design and Innovations (3)
- The student (4)

Q12 What pedagogical or practical strategies do you use to accommodate students with disabilities?

Q13 What are your major challenges in teaching students with various disabilities?

Q14 What accessibility resources would be helpful to you as an instructor?

Theorizing Lip Reading as Interface Design: The Gadfly of the Gaps

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ABSTRACT

This article explores what lip reading can teach us about interface design. First, I define lip reading. Second, I challenge the idea that people can “read” lips—an idea that is deeply imbedded in the literate tradition described by Walter Ong (1982) in *Orality and Literacy*. Third, I frame lip reading as a complex rhetorical activity of filling in the “gaps” of communication. Fourth, I present a lip reading heuristic that can challenge those of us in communication related fields to remember how the invisible “gaps” of communication are sometimes more important than the visible “interfaces.” And finally, I conclude with some reflections about how lip reading might “reimagine” disability studies for technical and professional communicators.

INTRODUCTION

In this article, I would like to explore a singular question: what can lip reading teach us about interface design? To answer this question, first, we’ll need to divorce lip reading from its negative cultural exposures as a remedial technique for deaf and hard-of-hearing individuals; second, we’ll need to rhetorically analyze lip reading by deconstructing the idea of lip reading *as* reading; third, we’ll need to understand how the rhetoric of lip reading can apply to other situations; fourth, we’ll apply these understandings to designing interfaces; and finally, we’ll explore lip reading within the context of disability studies.

In short, I argue that if we pay attention to lip reading as a complex process of filling in communication *gaps*, we can present lip reading as a theory that places how we communicate (the medium) at the center of what we communicate (the message). In doing so, I argue that attending to the ever-present *gadflies* in communication—the gaps, the silences, the absences, the inefficiencies—can reveal elements of communication that might help us enable freedom in a world dominated by noise.

RECLAIMING LIP READING AS THEORETICAL

First, let’s problematize our understanding of lip reading. Lip reading (also known as “speech reading”) is commonly understood as a multi-modal communication technique that allows an individual to approximate what is being spoken by combining acoustic information with lip movements. Everyone reads lips (at least superficially), a skill that begins in the first year of our lives. Studies of infants have shown that when the audio and video tracks of a talking person are out of sync, a 4.5 month old infant will recognize that the person is not, in fact, speaking and will stop watching the face (Kuhl & Meltzoff, 1984). Moreover, we don’t lose this ability as we get older. For instance, when watching videos, individuals will quickly recognize that audio and video are out of sync unless the “delay [is] less than a hundred milliseconds” (Bilger, 2011), and the key marker is the presence of lip-sync errors—the annoying lags in audio or video when the lips on screen do not match up

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with the audio. And most importantly, lip reading is potentially a *necessary* form of communication for many individuals who are deaf or hard-of-hearing, and at least 15% of Americans have some level of hearing impairment (Center for Disease Control, 2012). Lip reading, then, impacts us all to varying degrees.

Unfortunately, serious attempts to study lip reading have been limited—in part because one of the popular conceptions of lip reading views it as a novelty. Lips cannot be read with high levels of accuracy, and most of us know this. As a simple experiment, ask a friend/family member to “speak” to you without making any sounds. Start out with simple phrases, such as “my favorite color is orange” or “how are you today?”, and you will quickly discover that, for most, lip reading is extremely difficult, if not impossible—especially as a conversation moves from short words/phrases to entire discussions or narratives. As such, lip reading is viewed as an impossibility.

Quantitatively, studies have demonstrated a similar finding: *lip reading shouldn't be possible*. Upper estimates, and long standing anecdotal wisdom, suggest that without accompanying acoustic information, only 30%-50% of lip motions can be read accurately by the most expert lip readers. And this number might be extremely high. Homophenes (words that look alike on the lips, but sound different) are outnumbered by visemes (unique words) by nearly 3:1 in the English language, meaning that lip reading should only be about 25% accurate. One study of 84 hearing college students presented with videos without audio found the mean accuracy of reading lips to be significantly lower: 12.4% for 25 sentences (Altieri, Pisoni, & Townsend, 2011).

Even individuals who have spent decades learning to read lips are very careful about claiming any spectacular ability to do so. Brenda Jo Brueggemann (2001a), a noted disability and deaf studies scholar, writes that “I ‘pass’ at lipreading” (p. 793). I agree; as someone who is hard-of-hearing (in the high frequency range) and with two sisters who have similar disabilities, I can attest that my older sister reads lips better than I do, and I nearly always avoid claiming “I can read lips” for fear of an audience trying to “test” that claim with empirical evidence: “Oh, really? Then what am I saying?” Lip reading skills can be learned; a UK study in 2012 found that “lipreading classes lead to a range of positive outcomes

for people with hearing loss” (Ringham, 2012, p. 5). However, when we encounter someone who can read lips with any level of accuracy, we are still quick to label this as a magical *impossible possibility* or to respond with a whispered “wow!” or “how?”

The inaccuracy of reading lips creates moments of humor, which subsequently trivializes lip reading as a subject of serious enquiry. Consider the popularity of the YouTube channel “Bad Lip Reading” and “The Whisper Challenge” on *The Tonight Show*. The editors at Bad Lip Reading re-record the audio tracks of popular media (political debates, NFL games, movies, and television series) to match up with what the lips *look* like they are doing rather than what the speakers are actually saying. The results can be funny. For instance, one of the more popular videos, the inauguration day of Donald Trump, calls attention to the tension between President Obama and President-elect Trump as they stand side by side, smiling, with misread lines such as “You suck” or “You’re bad company” implying that the smiles are not genuine (see Figure 1). Currently, Bad Lip Reading’s channel is about to pass 1 billion views since its birth in March 2011.

Or consider another example. Jimmy Fallon, the current host of *The Tonight Show*, has a game called “The Whisper Challenge” where famous guests attempt to read lips while wearing noise-canceling headphones. Frequently, the phrases are chosen because of their possibility for being misread as sexual language, such as when Fallon had to read the lips of Julia Louis-Dreyfus as she said “Uptown Funk You Up” (see Figure 2).

Even deaf and hard-of-hearing individuals, whose livelihoods can depend on lip reading, have funny stories about “misread” lips. Famous deaf author Henry Kisor (1990), for instance, titled his book *What's That Pig Outdoors?* as an example of a misreading of his son’s words “what’s that big loud noise?” Personally, I have collected a number of funny sayings that resulted from mishearing and misreading over the years. For example, during an aerobics class several years ago, my instructor told us to call out “states” while performing an action, such as a push-up. I misread the instructor’s lips to say “steaks,” and when it was my turn, I called out “T-Bone.” Lip reading mistakes can be funny—hysterical,

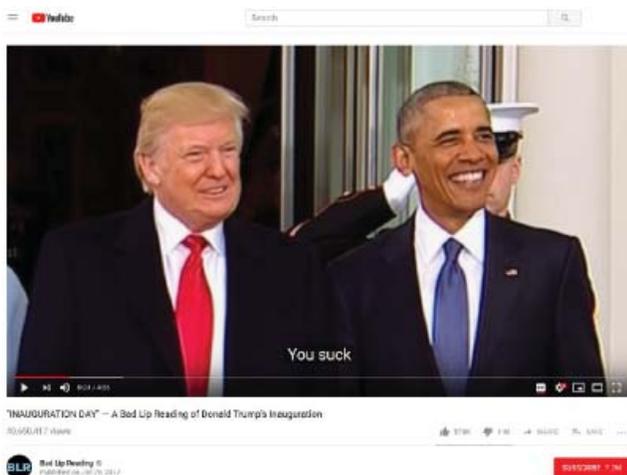


Figure 1: YouTube video, “Inauguration Day—A Bad Lip Reading of Donald Trump’s Inauguration.” Image description: Donald Trump and Barack Obama stand side-by-side while smiling. The subtitle says, “You suck.”

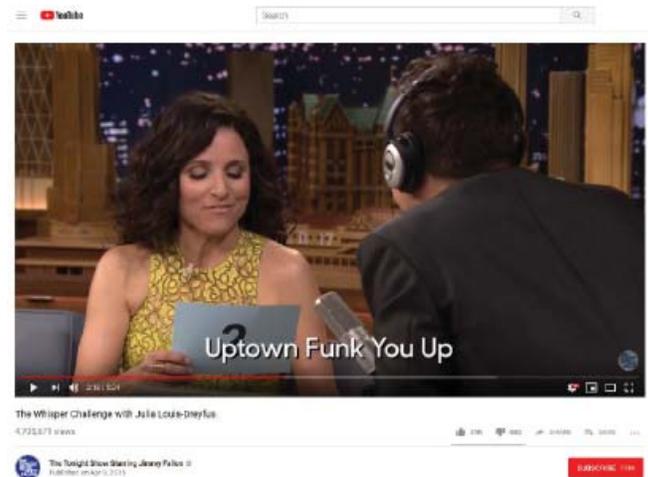


Figure 2: YouTube video, “The Whisper Challenge with Julia Louis-Dreyfus.” Image description: An over-the-shoulder shot of Julia Louis-Dreyfus pronouncing the letter “F” while Jimmy Fallon, wearing headphones, faces her. The on-screen text says, “Uptown Funk You Up.”

even; however, without reflection, the end result of finding humor in misread lips trivializes lip reading rather than acknowledging it as an important component of communication.

Capturing lip reading as a serious intellectual question has found limited success. The area most promising for research would be in deaf studies and/or disability studies, but for many deaf individuals, lip reading is viewed as contested. Lip reading implies that deaf individuals need to accommodate their hearing counterparts by entering into the world of hearing rather than vice versa: encouraging hearing individuals to enter into the world of sign language and deafness. For example, in Simi Linton's (1998) book, *Claiming Disability: Knowledge and Identity*, Linton uses the scenario of a deaf individual in high school who is encouraged to "study harder, *read lips*, and stay up late copying notes from a classmate" (p. 18, emphasis mine) rather than request a sign language interpreter. Lip reading, from this scenario, is viewed as an attempt at "overcoming" (p. 19) when deaf individuals should, rather, "demand social change" (p. 18). That is, lip reading implies deafness is a medical "impairment" that should be overcome with remedial techniques and, as such, can potentially contribute to the "historical oppression and exclusion of disabled people" (Shakespeare, 2010, p. 266).

Most research on lip reading has focused on the *science* of lip reading—linguistics, audiology, and pedagogy—which all focus heavily on the utilitarian *praxis* of lip reading in order to educate hard-of-hearing individuals in the technique of lip reading. Lip reading has been studied and taught to deaf students in specialized schools and courses in America since the mid-1800's, and the publications share a bias for lip reading as a remedial technique for overcoming deafness. For example, an educator in 1919 wrote that lip reading is taught so that "the deaf man can train his eye to substitute for his deaf ears" (Nitchie, 1919, p. 3), and the bibliography consists primarily of self-help texts such as "Practical Lip-Reading" or "How to Understand without Sound" or "Self-Instructor in Lip-Reading." Even the chapter breakdowns have a focus on "Daily Practice," "Lessons for Movements," and "Exercises." A more recent text on lip reading, such as *Speechreading (Lipreading)* (1971), was written by an audiologist and a speech reading specialist who present the theory of lip reading in more nuanced ways, but still focus most of their chapters on linguistics, training, teaching, instruction, and the history of lip reading. And in 2018, a quick Amazon.com search for "lip reading" brings up mostly instructional texts, such as *Reading Lips and Other Ways to Overcome a Disability* (2009) or *Lip-Reading Principles and Practise: A Hand-Book for Teachers and Self Instruction* (2014). The latter book is the first hit on Amazon, and it is a reprint of Nitchie's book from 1919—nearly 100 years ago.

Today, this utilitarian focus has resulted in audiologists, linguists, and computer scientists studying lip reading primarily in terms of how it works mechanically. Computer programmers and A.I. specialists have utilized linguistic knowledge to program computers to recognize speech patterns without sound, with limited success. Leastwise, they have not created A.I. similar to HAL 9000 in *2001: A Space Odyssey* when he reads the lips of the character Dave to prevent being shut down. In 2016, two companies released their A.I. programs that could extract audio information from video recordings, with claims of 46.8% accuracy for Google's DeepMind A.I., and 95.2% for LipNet's software, though it should be noted that this latter number was reached with extremely restricted vocabulary and syntax patterns (Hodson, 2016).

To recap: lip reading has been studied in interesting, but limited ways—namely as an impossible possibility, a way to generate laughter, an educational technique, or a conquest of artificial intelligence. Moving forward, I believe we can analyze lip reading more theoretically and in more nuanced ways. In doing so, lip reading (and lip readers) might offer technical communicators new insights into communication, such as interface design. The next few sections sketch a path for how this might work.

LIP READING AS READING

To explore lip reading theoretically, we have to briefly deconstruct it. And in deconstructing it, we'll see that lip *reading* is not, in fact, reading at all.

Studies of metaphors, spearheaded by George Lakoff and Mark Johnson (1980), have demonstrated the importance of embodied metaphors as a way of making sense of complex phenomenon. Unsurprisingly, deaf metaphors exist: hearing communities often co-opt deaf terms as metaphors for their own purposes. The idea of "tone deaf," for instance, can be utilized literally for someone who doesn't pay attention to the nuances of music or metaphorically for someone who doesn't pay attention to the nuances of a situation. The very word "deaf" is used as a pejorative metaphor to indicate someone who is "dumb" or "irrational"—primarily because an epistemology of deafness implies a person who refuses to learn. Joseph Grigely (2006) compiled a collection of quotes that demonstrate this, such as "complaints have fallen on deaf ears" (p. 230) or "parts of philosophy are deaf to some of life's most important questions" (p. 234) or "deaf to any reasoning" (p. 228). Hearing is often used as a metaphor for spiritual enlightenment; the Bible, for instance, contains numerous references to "hearing as understanding," such as when Jesus claims "Why can't you understand what I'm saying? It's because you can't even hear me!" (John 8:43).

Also, unsurprisingly, hearing individuals have attempted to make sense of deaf individuals by using their own metaphors. In the case of lip reading, reading (as a metaphor) is applied to the complex behavior of lip reading to make sense of the phenomenon. And in fact, there is no other way to make sense of lip reading except to use the metaphor. The only other synonym for lip reading is "speech reading," and even the American Sign Language (ASL) sign for "lip reading" involves directing the sign for read at the lips. As such, the idea of lip reading can only be understood by applying the metaphor of literacy—a contested metaphor for deaf and hard-of-hearing populations, considering that several studies have revealed the alphabetic literacy rates of deaf individuals to be at the third to fourth grade level for the last several decades (Morere, 2011). Lip reading, then, is a marginalized activity that is studied from external populations via the metaphor of literacy rather than being studied from within by deaf and hard-of-hearing individuals.

One way of recovering the actualities of lip reading from the metaphorical is to apply the ideas of Walter Ong. For Ong, literacy changes the mindset of the person who learns to read. In his 1982 book *Orality and Literacy*, Ong's conclusion after comparing the differences between primarily oral cultures and literate cultures is that "writing provides for consciousness as nothing else does" (p. 82), including radical shifts in thought, such as from thinking holistically to thinking analytically or from thinking situationally to thinking abstractly. One of the implications of Ong's ideas is that literacy wrongly implies that all communication is similar to

literacy. That is, because literacy removes us from the context of communication and creates a “context-free” way of thinking, we begin to view all of communication as a *transmission of information*. As Ong argues, “thinking of a ‘medium’ of communication [...] suggests that communication is a pipeline transfer of units of material called ‘information’ from one place to another” (p. 176) and that this model shows “chirographic conditioning” (p. 177). That is, literacy has created the framework for understanding other mediums of communication.

Taken to the extreme, Ong’s idea of literacy implies a model of communication that looks similar to the oft-critiqued Shannon-Weaver model of communication. Consider Figure 3 for how a literacy model might transfer to a lip reading model. Writing, as a model, requires at bare minimum the components of the rhetorical triangle: 1) an author, 2) a text, and 3) a reader, situated within 4) a context. As such, writing encourages a similar model for communication where the points of the model shift to 1) a sender, 2) a medium, 3) a receiver, and 4) a communication’s context. This same model, when applied to lip reading, suggests that communicating with a lip reader is as simple as 1) a speaker making 2) clear lip movements for 3) a reader so that “understanding” can take place within 4) the context.

Using the framework of literacy as a framework for lip reading wrongly encourages us to view lip reading as primarily a linear exchange of information. The responsible lip reader is supposed to expedite the flow of information with a clear reception. For example, from personal experience, I can attest that my ability to read lips increases when I participate actively—e.g. paying careful attention to the lips, actively intervening when the message is lost, getting a good night of sleep to avoid mental lapses, or minimizing the distance between the speaker and listener. In return, the responsible speaker is supposed to expedite the flow of information with a clear

transmission of information—e.g. clear enunciation, slower speech, no visual obstructions of the lips, and removal of facial hair. If done well, then lip reader will “without effort, combine the information from the two sensory modalities” and “will not know whether he is depending more on hearing or more on vision. He will only know that he understands” (Jeffers & Barley, 1971, p. 3). Of course, these are necessary components of lip reading—lips cannot be seen if someone’s back is turned; lips cannot be seen if a mustache covers the lips; lip reading can be more effective if the audience member has residual hearing and is able to combine the acoustic with visual information.

However, focusing on lip reading as reading provides us with a limited and superficial view of lip reading as an activity. At the most basic level, the medium is different. Ong argues, for instance, that speech exists within time, not space. That is, “sound exists only when it is going out of existence” (p. 32), and as such, orality has no permanence. Similarly, lip reading has no permanence because the reading exists only as it is going out of existence. Unlike a written text, a lip reader cannot re-read lips. Ong writes that “When I pronounce the word ‘permanence,’ by the time I get to the ‘nence’, the ‘perma-’ is gone, and has to be gone” (p. 32). The same experience happens for the lip reader. As such, no reading is taking place. Lip reading is similar to reading only in the sense that it exists as a visual medium.

Because the medium has changed, the characteristics of the medium must also change. Consider William Hart-Davidson’s (2001) interpretation of Derrida. He argues that writing (the “sign”) has four components, the first two are specifications and the last two are affordances: 1) the sign can be “reproduced,” 2) the sign can be “interpreted, over and over again,” 3) the sign is not bound by the original “context”, and 4) the sign operates in the “absence of its author” (p. 148). Lip reading has none of these “specifications”

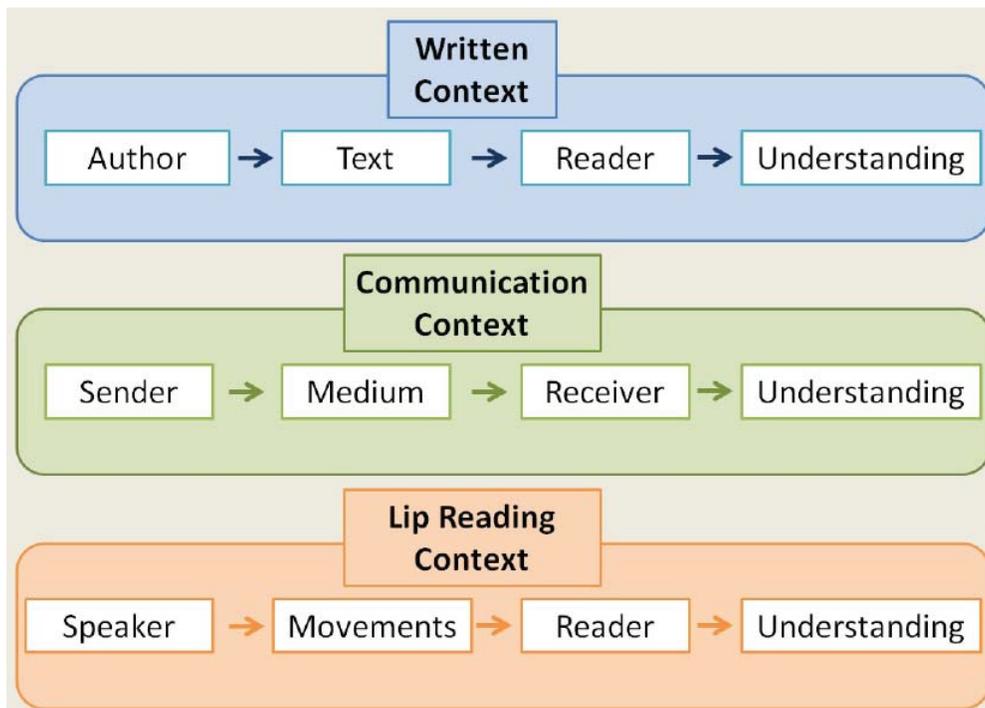


Figure 3: How Ong’s literacy model influences a lip reading model. Image Description: A diagram outlining the three contexts: Written, Communication, and Lip Reading.

Table 1: How print-based reading differs from lip reading

Print Literacy	Lip Reading Literacy
Decontextualized	Contextualized
Analytic	Synthetic
Linear	Dialectical

or “affordances” (p. 148), excluding the possibility of a video camera capturing the lip movements. And even the specification most similar to lip reading—the possibility for reproduction (such as when the lip reader asks someone “what did you say?”)—cannot authentically recreate the originality of the speech that occurred before, during, or after the moment. From personal experience, I can attest that asking speakers to repeat their utterances elicits a broad range of responses, such as an exact restatement of the missed speech, a truncated version of the statement, a reply of “nothing” or “it wasn’t important,” or a complete lack of a response at all. When a lip reader misses the utterance, they typically have missed the entirety of the rhetorical moment, and by asking for a “reproduction,” the rhetorical moment (namely *kairos*) is changed as well.

Another way to move lip reading from the framework of print literacy is to consider Marshall McLuhan’s (Ong’s mentor) famous adage of “the medium is the message”—an adage that quickly problematizes the stated goal of lip reading: a medium of communication (i.e. lip reading) necessarily changes the message that is being communicated. If McLuhan is right, then:

- form is more important than content;
- style is more important than substance;
- how is more important than what.

In essence, the *rhetorical presentation of information* cannot be divorced from the *interpretation of meaning*. In a simple sense, we know this to be the case. Sarcasm, for instance, is predicated on the ability for the same words (“I hate you,” for instance) to have entirely different meanings based on how, when, and where those words are spoken. Other studies have shown this empirically. For example, a recent study of PowerPoint showed that students exposed to a lecture both with and without PowerPoint slideshows indicated that students preferred the visual medium, but they remembered less information (Savoy, Proctor, & Salvendy, 2008). That is, the medium (PowerPoint) changes the message (students’ perceptions and memories). We also know that McLuhan’s adage works even better over long periods of history for impacting the noetic abilities of the cultural members who are exposed to those mediums. As we already saw with Ong, a literate person is not primarily an oral individual with the ability to read; a literate person is radically changed by literacy. The medium of writing changes not only the message, but the entire mindset of the reader.

We can conclude that lip reading, as a medium, must impact the message and the noetic activity of the listener/reader. Lip reading exists within the visual realm (similar to literacy), but within the auditory realm (similar to orality). As such, taking the perspectives of Ong, McLuhan, and Hart-Davidson, we can theorize that lip reading is a unique medium. Lip reading is not similar to reading with a decontextualized linear transfer of information from one individual to another; lip reading must have its own characteristics that should be carefully analyzed. Taken to an extreme, we’ll see that lip reading is potentially the exact opposite of reading a text.

Reading is mostly decontextualized, analytical, and linear, whereas lip reading is mostly contextual, synthetic, and dialectical. In the next section, we’ll examine these ideas in more detail.

LIP READING AS A NOETIC ACTIVITY OF FILLING GAPS

The previous section deconstructed lip reading as reading. In this section, I use lip reading to foreground the importance of gaps in communication. The thesis of this section is simple: lip reading is primarily a noetic activity of filling in gaps. Because lip reading is so inaccurate (as demonstrated in the opening section), lip reading only works because the lip reader fills in the gaps of the conversation with increased: 1) contextualized thinking, 2) synthetic thinking, and 3) dialectic thinking. See Table 1 for a dichotomous framing of terms. Remember, too, that these dichotomous framings are not universal. Lip readers can still read lips in decontextualized moments, while using analysis and linearity. These terms were chosen primarily to demonstrate the distinct challenges that lip readers encounter.

First, lip reading attunes almost exclusively to context, whereas print literacy is not “bound by the context in which it was originally produced” (Hart-Davidson, 2001, p. 148). At the outset of Henry Kisor’s (1990) *What’s That Pig Outdoors?*, he claims that lip reading is largely “context guessing” where the listener has to “fill in the gaps between the words that are understood” (p. xiii). Context is, of course, another metaphor borrowed from literate culture. In rhetorical terminology, (con)text refers to without the text—that is, everything surrounding the rhetorical situation except for the writer(s) and reader(s). To divorce the idea from print literacy, perhaps a better word might be Ong’s use of the word “situational”—a term from an oral perspective. In either case—contextual or situational—communication is less about information exchange and more about filling in the missing gaps with contextual/situational cues.

Consider a relatively simple example that demonstrates how a lip reader is filling the gaps of potentially missing information via context. One of the most famous misreadings of lips is the example “will you marry me” versus “will you bury me.” Because the words “marry” and “bury” are homophones, they look identical on the lips. The lip reader, however, can quickly deduce what has been said—the missing information of the letter “b” or the letter “m”—by identifying context. Even a novice lip reader can determine that someone has said “will you marry me” if the speaker is a boyfriend/girlfriend, kneeling down on one knee, holding out a ring, and asking the question in a romantic context (such as a dinner date). And if the lip reader does misread the word as “bury,” they can quickly determine that almost no one would say “will you bury me” unless the context demanded it (e.g. the speaker was carrying a shovel, holding a gun, or standing in the middle of a cemetery).

Lip reading, then, is less about careful analysis of lip motions and more about rhetorical expectations based on the context/situation, and these expectations are generated by shared experiences. For example, most of us have seen enough movies and television shows to understand that an able-bodied person dropping to one knee in a romantic setting is a prelude to “popping the question.” As such, these shared experiences create shared expectations, and shared expectations mean that the speaker/listener is already in a conversation prior to the speech act. In Ong’s (1982) words, “[t]o speak, I have to be somehow already in communication with

the mind I am to address before I start speaking” (p. 172), and presumably, the antithesis would be true: to listen, the lip reader has to be already in communication with the mind that is about to speak. From a literate framework, then, Ong argues that the audience is a fiction created by the mind of the writer (1975). From a lip reading framework, the speaker is a fiction created by the mind of the lip reader based on an anticipated fulfillment of contextual/situational cues.

Second, reading print requires analytical abilities: the ability of “breaking up thoughts” (Ong, 1982, p. 39). For instance, in writing or reading, a book has to be broken apart by: the thesis, the chapters, the paragraphs, the topic sentences of paragraphs, the sentences, the letters, and the words. As such, reading is an analytical activity that, for Ong, creates an analytical mind, as opposed to an “aggregative” or synthetic mind (a mind able to piece together whole pictures from incomplete data). In *The Alphabet Effect*, Robert Logan (1986) goes a step further and argues that it is the alphabet that encourages this ability to think analytically; the alphabet, after all, breaks sound into its smallest component—the phoneme—in order to render all of spoken language in a few, abstract characters (twenty-six in the Roman alphabet). Logan argues that when students learn the alphabet, they are also learning “the intellectual by-products of the alphabet, such as abstraction, *analysis*, rationality, and classification” (p. 21, emphasis mine).

However, in lip reading, Jeffers and Barley (1971), the authors of *Speechreading*, are emphatic: in lip reading, “*no analysis is possible*” (p. 29, emphasis theirs). Lip reading requires a “synthetic” mind—one capable of grasping “ideas in their entirety” (p. 28). The lip reader, then, “has the ability to piece together the whole from perceived fragments” (p. 28) and rapidly arrive at conclusions from limited data. Synthesis can fill in the gaps of “perceived fragments” (p. 28) better than analysis. Lip readers are not dependent upon just the visual content of the lip movement; lip readers combine context clues with auditory/visual information to rapidly jump to a conclusion—occasionally a wrong conclusion, as the humorous elements of lip reading demonstrates.

Lip reading, then, is closer to the oral framework established by Ong: a lip reader, like an oral person, involves a totalizing and big picture mindset, what Ong (1982) calls the “aggregative” mind (p. 38). For example, orality prefers “not the soldier, but the brave soldier; not the princess, but the beautiful princess; not the oak, but the sturdy oak” (p. 38). Similarly, the lip reader prefers a big picture framework for communication—simply because synthesis can reach more accurate conclusions while analysis (that is, searching for exactness in the ideas being shared) yields fragments. However, unlike orality, lip readers benefit from the literate mindset, that is, from extensive reading and other access to media. The only way to fill in the contextual gaps and think synthetically is to have knowledge prior to the speech act (*a priori* knowledge rather than *a posteriori*), and this knowledge can be learned via access to texts/media—new vocabulary, new contexts, new hypotheticals, new ideas, new names, new places, new possibilities. As Jeffers and Barley (1971) suggest, “the individual must have a knowledge of vocabulary and idiomatic expressions extensive enough to permit him to understand what is said to him” (p. 33), and this knowledge is found outside of the actual moment of lip reading.

As such, the lip reader benefits the most from conjoining the oral framework of lip reading with the literate framework of writing—the so-called “secondary orality” that was championed by Ong and

seen in digital communication. Speaking from experience, I have the most success in conversations when I successfully understand the topic of conversation at the outset: an agenda that is passed out before a meeting, an introduction slide before a presentation begins, an email before a student stops by my office, or the conclusion before a conversation begins. If, for instance, a friend texts me that they have a funny story to tell, I know that when I next see them, I can expect to laugh regardless of whether I hear the subsequent details correctly. Details don’t matter, until the conversation changes directions. Conversations tend to be more associative rather than linear, so as soon as the conversation moves in a new direction (e.g. an unexpected last-minute agenda item, a new story, a random question from a student, etc.), I have to listen/look carefully for the cues that indicate a change in direction—emotional changes, pauses in conversation, vocabulary that was not part of the original framework—to quickly deduce that a new topic is on the table. In essence, by ignoring details from careful analysis and referring to contextual clues and *a priori* synthesized conclusions generated from text/media, I can better participate in conversations.

Third, lip reading is a dialectical form of communication. In a simple sense, this is true. Dialectics connects us to the similar word “dialog,” which involves back and forth interchanges between multiple speakers. A lip reader, by default, has to take control of parts of the conversation by interjecting with his/her own voice; a monologue, by contrast, effectively ends the conversation for the lip reader because it doesn’t allow for confirmation of the lip readers’ interpretations. Jeffers and Barley (1971) write that the speech reader “must mentally fill in sounds or elements that he did not see. He must make a number of conjectural perceptions” (p. 26). But when these conjectures are incomplete, inaccurate, or simply wrong, the lip reader must interject (rather than conject) via participatory rhetoric.

In a more theoretical sense, dialectics requires a totalizing mindset: to transcend the thesis and antithesis with a new synthesis (as we saw in the previous section). But this synthesis always comes as the result of a great struggle—a wrestling between two minds/ideas that cannot happen during a monologue. Jacques Ellul (1981), a self-proclaimed dialectician, wrote that “if the positive remains alone, it remains unchanged: stable and inert. A positive—for example, an uncontested society, a force without counterforce, a *man without dialogue*, an unchallenged teacher, a church with no heretics, a single party with no rivals—will be shut up in the indefinite repetition of its own image” (p. 295, emphasis mine). A lip reader works toward an understanding of truth in a similar sense: they use contextual clues to reach a synthetic conclusion, but with the possibility of being challenged by competing evidence. As Jeffers and Barley (1971) write, the mind of the lip reader is flexible “because so many sounds are homophenous and so much information is missing” (p. 30) and “poor speechreaders are astonishingly rigid” (p. 31); that is, they are less flexible at modifying their conclusions.

In practice, this idea of dialectics in lip reading works in a simple way: lip reading works best during interaction rather than a one-way transfer of information (as implied by the framework of print literacy). That is, the lip reader has to become an active participant in the conversation rather than a passive recipient of information. In my experience, I find that I am typically in one of three roles as a lip reader: 1) dominant, where I control the topics and the flow of the conversation to avoid the possibility of missing information, 2) participatory, where the power dynamics between the speakers is democratic and interactive, or 3) submissive, where I say very

little and miss sections of the conversation. The first and last roles are hardly ideal, but necessary in contexts where the participation of the audience is discouraged (for example, public presentations). The middle role allows for the most satisfaction, although it requires individuals who are somewhat sensitive to the challenges of reading lips (e.g. willing to be interrupted, willing to restate earlier comments, etc.).

Lip reading, then, relies on at least three gaps of communication that are ignored by utilizing traditional print literacy (i.e. *reading* lips) as a framework: 1) context fills in the gaps of knowledge, 2) synthesis fills in the gap of missed details, and 3) dialectics fills in the gaps of incorrect information. I believe this explanation of gaps largely explains why any attempt to quantify someone's ability to read lips must, by default, be limited: it simply doesn't matter that only 25% of words are visemes, or that college students can only read 12.4% of lip motions. A lip reader will never reach 100% accuracy (just like a person with "normal" hearing will not always hear 100% accurately); such expectations are unrealistic and unnecessary. However, with context, synthesis, and dialectics (which are all excluded during any attempt to correctly *read* lips), the lip reader will still be able to participate in conversations.

APPLYING LIP READING TO COMMUNICATION DESIGN

In this section, I would like to speculate on what lip reading can teach technical communicators about interface design. That is, I suspect that lip reading can offer us a unique framework for analyzing other mediums of communication, one where gaps are foregrounded in the analysis. If so, what changes might we expect to implement by focusing on the invisible elements of designing visible interfaces? To answer this question, I would like to do three things: 1) conceptualize why lip reading is transferable to other mediums, particularly visual mediums; 2) develop a three-part heuristic that can aid designers in their creation of future interfaces; and 3) build upon arguments made in a 2017 issue of *Communication Design Quarterly* that problematized the use of wearable technology.

First, a simple question: why might lip reading be interesting (or applicable) to other mediums, in particular visual mediums? I suspect a few reasons. For one, lip reading is a visible representation of an auditory medium but is simultaneously an impermanent medium, one where the lip motions are constantly changing. As such, lip reading straddles the orality/literacy divide and recalls Ong's secondary orality, an orality that is "sustained [...] by electronic devices that depend for their existence and functioning on writing and print" (p. 11). More directly, Hart-Davidson (2001) argues that the word processor gives us signs that are "much more changeable and reiterable than those rendered on paper, in stone, and so forth" (p. 149, emphasis mine). Therefore, I sense that lip reading can yield insights into our digital screens, which share the impermanence of speech (ever-changing graphics, signs, information, updates, etc...), while still existing as a visual medium. Put more simply, "...as textuality in the 21st century is becoming increasingly visual and digital, there is a trend away from traditional print-based texts to video and multimedia texts. Insights from the world's most visually acute people may provide insights on how we may all process information visually" (Bauman & Murray, 2013, p. 249).

But another reason is more compelling to me: what is easily forgotten in issues of visual design is that the visible aspects of

the interface must be analyzed in conjunction with the invisible. And for this, lip reading excels since it conjoins the visual aspects of communication with the gaps (the hidden, empty spaces) that nonetheless have a marked impact on the audience's interpretation of the message. Theories of design, for instance, have identified the importance of white space and margins and backgrounds. Rhetoricians have long known of the value of context clues. Colloquially, everyone knows that silence speaks volumes—that what isn't said is sometimes more important than what is said. In short, every medium succeeds because of gaps. It is the postmodern "absence" that marks all communication, the separation that occurs between the signifier and the signified during mediation. Communication can never escape that recurring, Socratic gadfly of the gaps. The value of lip reading, however, is that it foregrounds those gaps as critical to successful communication rather than leaving them as invisible and ancillary.

Therefore, I propose this: lip reading can serve as a heuristic for design choices. It does so in the following manner: lip reading is fundamentally a process of filling in three gaps of communication: 1) context fills in the gaps of knowledge, 2) synthesis fills in the gap of missed details, and 3) dialectics fills in the gaps of inaccurate information. As such, a heuristic that is built around lip reading encourages us to ask the following three questions (see Figure 4).

In a general sense, we intuitively ask these questions daily in our communications. As an example, consider a syllabus for a college course. After several semesters of taking courses, students are generally able to predict the routine (and sometimes standardized) elements of a syllabus—the attendance policy, the schedule, the readings, the required materials, the contact information, the academic misconduct policy. That is, their past experiences begin to shape their understanding of the present syllabus. With repeated exposure, the genre (or the generalized framework) becomes more important than the details of each individual syllabus. To use a term from cognitive psychology, the students begin to use perceptual frames to understand a syllabus (Johnson, 2014). Over time, students begin ignoring the details of each new syllabus and reach generalized conclusions via limited scanning of information (which partially explains why professors bemoan "it's on the syllabus!" to the students who have ignored the specifics of that particular course). And the only way that students realize the inaccuracy of their conclusions is when subsequent exchanges with the professor, their classmates, or the syllabus create enough cognitive dissonance to address the inaccurate conclusions.

On a deeper level, lip reading reminds us that the breakdowns in communication are rarely the sole fault of the audience or the user. As such, lip reading dovetails nicely with the user-centered

1. What past experiences (previous contexts) are informing the audiences' interpretation of the current experience (current context)?
2. What general conclusions (synthetic knowledge) has the audience reached by missing the details of the communication exchange?
3. What dialogic exchanges (dialectical moments) have allowed the audience to cross-check the accuracy of their conclusions?

Figure 4: A lip reading heuristic for communication

perspective that technical communicators praise, simply because blaming the user/audience is counter-productive (see Johnson, 1998). By default, a lip reader will reach inaccurate conclusions. Therefore, lip reading encourages an ethic of relationship building (participatory) rather than an ethic of power (dominant/submissive).

For instance, continuing with the example of the syllabus, consider the plagiarism policies. Most instructors include an academic misconduct policy in the syllabus to remind students of their responsibility to avoid plagiarism and the consequences of their potential misconduct. But as Margaret Price argues, the definition of “plagiarism is not stable. What we think of as plagiarism shifts across historical time periods, across cultures, across workplaces, even across academic disciplines” (p. 90). Students know this, at least on a subconscious level. Excluding the moments when plagiarism is a conscious, deliberate attempt to avoid doing work, students have learned that the question of “what is plagiarism?” is heavily contested and is answered differently depending upon the instructor, the context, and the assignment. As such, students rely heavily on past experiences with plagiarism to contextualize their current writing assignments, without carefully looking at the details of each instructor’s stated expectations (in the syllabus, lectures, handouts, and other course materials). And when students fail to account for plagiarism in the new context, they do so, frequently, because the instructor and student were not in a dialogue prior to the moment of failure. The cognitive dissonance only became apparent too late in the conversation, and as Price states, the result for the student is a “gotcha!” moment. Lip reading, then, feeds into the narrative of user-centered design by recalling that the user (like the student) is not stupid; rather, the conversation and relationship between the designer and user have failed to result in shared expectations.

Moving from generalized communication situations to user interfaces, I propose the following three-part questionnaire that can serve as a heuristic for designers (see Figure 5).

Consider an extended example of how this heuristic might provide insights into interface design: the use of wearable technologies. A 2017 special edition of *Communication Design Quarterly* examined several wearable technologies in detail, and the editor concluded that we must attempt to “challenge and extend the promise of wearables as revolutionary technologies that have the potential to be transformative for systems and individuals” (Jones & Gouge, 2017, p. 7). Let me extend those challenges via a brief analysis concerning the use of pedometer counts in fitness trackers.

I entered into the realm of fitness trackers over two years ago by purchasing a Garmin Vivoactive device—a tracker designed to measure steps, sleep, GPS coordinates, heart rate, and other data that would allow me to reconceptualize my health. Although Garmin’s mobile application (called “Garmin Connect”) has evolved over the

- | |
|---|
| <ol style="list-style-type: none"> 1) What past experiences inform the users’ interpretation of the interface? 2) What conclusions will the user make that are not stated by the interface? 3) What dialogic exchanges does the interface allow in order to cross-check interpretations? |
|---|

Figure 5: A lip reading heuristic for interface design



Figure 6: Garmin Connect application interface screenshot. Image description: Four activities are shown: Heart Rate, Steps, Calories, and Sleep. The user has received a green checkmark for sleeping over eight hours. The user has also walked 4,372 steps and not yet received a green checkmark in this category.

years, the core has remained the same. See Figure 6 as an example of their opening screen. Focusing just on step counts, each user is provided with two pieces of immediate information: 1) how many steps they’ve walked that day, and 2) whether they’ve reached their expected total (the check mark).

Using the lip-reading heuristic as the foundation for a brief analysis, this interface is problematized for the following reasons:

- 1) What past experiences inform the users approach to the interface? The user is required to fill in several knowledge gaps regarding step counts. How many is too many? How many is too few? Why is the default number 10,000? What does the Center for Disease Control (CDC) recommend for daily activity? What is a “step”? How are the steps counted? How accurate is the device? The user is required to answer multiple questions without knowledge of gait and posture, without knowing the science behind pedometers, without any training regarding activity level increases, without knowing how accurate the pedometer might be, or without knowing how a person’s idiosyncratic variables (such as height, weight, leg length discrepancies, etc…) might impact the numbers. All this knowledge must be filled in by experiences that are external to the immediate interface.
- 2) What conclusions will the user arrive at that are not stated by the interface? The green check box next to the step count encourages the user to potentially ignore the complex variables related to health and adopt a binary logic: “Have I met my step counts today? Yes; therefore, I am healthy. No; therefore, I am not.” Such binary thinking reinforces two assumptions that are problematic. First, such thinking excludes anyone who is not able-bodied: health is, presumably, only available to individuals who can walk. Second, such thinking contributes to a Western view of health—that is, we can isolate a distinct variable and quantify it, and more importantly, we can draw

causal connections between those two variables: variable X (steps) has impacted variable Y (health, as represented by a checkmark).

- 3) What dialogic exchanges does the interface encourage in order to cross-check interpretations? The application does include limited interaction with other users and connections to social media applications, but not on the opening screen. Potentially the most important dialogue is the conversation that the user has with his/her own body. For example, if a user has concluded that they are healthy (based on a green checkmark), yet the body sends bio-signals such as injury, pain, or fatigue, then the user might conclude that they may be doing too much, too soon. In the worst case scenario, a user might conclude they are unhealthy because they cannot consistently match up with their expected step counts, become injured because they attempt to do too much, and then have their conclusion reinforced: they are, in fact, unhealthy (and even more so, now, because they cannot reach their step counts because of injuries). An extreme user might remain stuck in that cycle for many years, or they might reject the idea of pedometers entirely. In the best case scenario, the user might conclude that the quantitative model for health is incomplete and begin to incorporate the step count data as a single, isolated variable that can help them with their attempts to modify their lifestyles, but is not predictive of health, per se.

In short, the Garmin Connect interface—as currently designed—is problematized from an analysis of gaps. That is, the simplified design allows users quick access to their daily step count information, which is strong design: the simplicity succeeds at not making us think too heavily (Krug, 2006). However, the success of the design relies largely on past experiences to contextualize the number, relies heavily on an ableist/Western model of health for conclusions, and provides limited opportunities for users to cross-check their conclusions via dialogic exchanges. The heuristic, then, reveals information that the interface potentially conceals.

A re-design of the app's interface would not need to be extensive. I am not suggesting that we need to populate the interface with complicated details, warnings, or background information. The interface, as designed, already presents usable information to the user while following tried-and-true user-centered design approaches (e.g. strong contrast, identifiable icons, hierarchies of information, brief snippets of information, progressive disclosure, etc.). A re-design might address concerns about communication gaps by utilizing current features of the application. For instance, the Connect app adopts a basic principle from game theory—the idea of “leveling up” (McGonigal, p. 147)—and gives “Badges” to the user when they accomplish certain tasks, such as when they complete a 20 mile bike ride or comment on another user's activity. It would be a relatively simple addition to reward users with badges for doing activities, such as:

- “Take this posture test” (to encourage accurate contextual assumptions about walking);
- “Read this article on the history of the 10,000 step count goal” (to encourage more accurate conclusions about the correlation between step counts and health);
- “Comment on 20 activities from your connections” (to encourage dialogue between users of the system).

Adding these small additions would encourage the user to develop a deeper understanding of their health, one built on addressing gaps rather than relying upon those gaps for the success of the interface/product.

Of course, this short analysis of step counts is not meant to be a thorough deconstruction of pedometers, nor is the Garmin Connect app indicative of how such interfaces are designed (or should be designed). However, this short analysis does demonstrate how the lip reading heuristic might be applied to identify potentially invisible problems with the interface.

CONCLUSION

This article has attempted to 1) define lip reading, 2) deconstruct the idea of reading lips, 3) analyze the gaps that influence lip reading, and 4) suggest ways to implement a lip reading heuristic to other mediums. In doing so, I hope that I've been able to add to the growing body of literature that uses disability studies to enhance our understanding of rhetoric, technical communication, and user-centered design (Booher, 2011; Brueggemann, 2001a; Meloncon, 2013; Palmeri, 2006; Zdenek, 2015; and others).

Part of our responsibility (as rhetoricians who focus on user-centeredness and audience-awareness) is to continually challenge the able-bodied assumption “that the world is made up of only hearing, seeing, walking, mouse-using, able-bodied technology users and students” (Zdenek, 2015, p. 10). As such, I hope that I've presented lip reading as an area of potential insight and further research for enriching our ideas about communication. I've argued that lip reading cannot be viewed singularly as a remedial technique for integrating hard-of-hearing and deaf individuals into the world of the hearing, nor can it be viewed primarily as an extension of literacy. Lip readers live in gaps—in the spaces between the oral and the literate, between the visual and the auditory, and between the hard-of-hearing/Deaf and the able-bodied. As such, an analysis of lip reading potentially offers insights into gaps within other forms of communication, especially the hybridized forms of multimedia communication in the 21st century.

As well, on a personal note, as someone who has been hard-of-hearing and a lip reader for my entire life, part of the challenge moving forward is that a number of disabilities, such as deafness, are invisible, and many of us fear and avoid the moment of “coming out” as disabled (Kornasky, 2009). Doing so, however, can be extremely powerful. For example, I am confident that my mental capabilities have been profoundly shaped by lip reading. For instance, I have found my noetic activity to closely parallel the mental make-up that I've outlined in this article: I have a doctoral degree in rhetoric (a desire to understand how audiences shape communication); I have a tendency toward big picture thinking (synthetic awareness); I have a dialectical worldview (a somewhat flexible perspective); and I read voraciously (an attempt to understand the minds of people whom I am conversing with for better predictability in conversations). I'm not, of course, claiming that lip reading has caused my identity. But I am claiming that lip reading has positively shaped my mindset, and unsurprisingly, this mindset has heavily influenced my reading, research, and career. As such, I offer my personal experiences with lip reading in the hopes that it will contribute to “the insights that may be gleaned from deaf people whose highly visual, spatial, and kinetic structures of thought and language may shed light into the blindspots of hearing ways of knowing” (Bauman & Murray, 2013, p. 246).

Moreover, analyzing lip reading reminds us that everyone is disabled by poor design. That is, on some level, everyone is already disabled. This claim isn't the generic idea that "If we live long enough, we'll all be disabled" (Brueggemann, 2001b, p. 369) nor is it the universal claim of "We are all disabled" (Davis, 2013, p. 276) already. Instead, this claim recognizes that someone is disabled by cultural oppression rather than by any bodily defect. This "social model of disability" argues that disability is "not located in a single impairment but instead exist[s] in the limiting structures, designs, and products of the social and built environment" (Walters, 2010, p. 430). For instance, as a lip reader, I am not disabled because I cannot hear as well as most of my colleagues, friends, and family. Instead, I am disabled by social, economic, and environmental situations that do not allow for me to successfully read lips. From this perspective, a mustache becomes a disabling agent. A conference room without a round table is a disabling agent. A surprise meeting from a student without a contextualizing agenda becomes a disabling agent. Lack of access to a public library (to enhance my knowledge of different contexts) becomes a disabling agent. And so on. Our field, then, needs to further grapple with how lip readers fit into questions of universal design (UD) and universal design for learning (UDL)—that is, how can we enable lip readers via design choices rather than disable them?

Lastly, and perhaps most philosophically, lip reading reminds all designers of technological interfaces that the gadflies in communication—the gaps, the silences, the absences, the inefficiencies—might help us regain a small amount of freedom in a world filled with technological noise. That is, technology is often efficient, but communication is often not. Therefore, as we increasingly integrate our lived-world environments with our bodies via technological mediation, we must carefully adapt technology to human constraints rather than forcefully requiring that humans adapt to technological constraints. In doing so, lip reading builds upon rhetoric and user-centeredness by reminding us to listen to our audiences/users and enable them with choices.

As such, I offer lip reading as a modest contribution to those of us studying disability and communication, and I challenge designers of technological interfaces to use lip reading as a way to counter noise with reflection. Because, ultimately, theorizing about lip reading reminds us to be like Socrates—intellectual gadflies who poke holes (gaps) in the logic of attempts to ignore the complexity of communication. Lip reading reminds us to enact the words of Jacques Ellul (1989, p. 412) that "we profit from the existence of little cracks [gaps] of freedom" and that our hope in this age is to "install in [the cracks and gaps] a trembling freedom." Lip reading reminds us to challenge monoliths by growing the gaps and spreading the cracks. Lip reading reminds us to communicate *with* one another rather than *to* one another.

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Designing for Intersectional, Interdependent Accessibility: A Case Study of Multilingual Technical Content Creation

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ABSTRACT

Drawing on narratives (Jones, 2016; Jones & Walton, 2018) from bilingual technical communication projects, this article makes a case for the importance of considering language access and accessibility in crafting and sharing digital research. Connecting conversations in disability studies and language diversity, the author emphasizes how an interdependent (Price, 2011; Price & Kerchbaum, 2016), intersectional (Crenshaw, 1989; Medina & Haas, 2018) orientation to access through disability studies and translation can help technical communication researchers to design and disseminate digital research that is accessible to audiences from various linguistic backgrounds and who also identify with various dis/abilities.

INTRODUCTION: CAPTIONS, SUBTITLES, AND LANGUAGE ACCESSIBILITY

I began to understand the importance and complexity of accessibility in bilingual media when I relied entirely on closed captions and subtitles to understand what I was watching. As an elementary-school Spanish-speaking student learning English for the first time, I first watched all English-language television and movies with both Spanish subtitles and closed captions, making sense of visual and aural information (e.g., words, sounds, expressions) through written words in Spanish. As my English language skills improved, I transitioned to watching English language programs with English subtitles, using the alphabetic transcription of dialogue to verify the English words that I was hearing, to continue practicing my pronunciation, and to learn new cultural practices and phrases. Like many language learners, captions and subtitles played different yet complementary roles in my transition to learning a new language (Winke, Gass, & Sydorenko, 2010; Vanderplank, 1993).

Captioning and subtitling have different definitions and extended disciplinary and professional histories that have been connected to issues of accessibility and language learning in various ways. Markham and Peter (2003) explain that “captions provide reading input to augment the pictorial and audio input supplied by various forms of commonly used video technology,” providing more than mere transcripts of voiced interactions (p. 332). Zdenek (2015) “distinguish[es] between subtitling and closed captioning, reserving the former for on-screen translations of the spoken language into the reader’s written language and the latter for the full complement of sounds, both speech and nonspeech, that need to be made accessible to deaf and hard-of-hearing viewers” (p. 35). Although Zdenek (2015) rightfully emphasizes the fact that closed captions are intended to make content accessible to deaf and hard-of-hearing viewers, since “closed captioning usually implies a deaf or hard-of-hearing audience” while “subtitling usually implies a hearing audience that doesn’t understand the target language and is in need of on-screen translations”(p. 35), research has shown that captions are also of value to hearing individuals learning or practicing new

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languages (Markham, 1999; Winke, Gass, & Sydorenjo, 2010). In her discussion of captioning practices as pedagogical tools, Butler (2018) further clarifies that “when we incorporate captions into our video editing process, we design pedagogical spaces in which we do not accommodate different ways of communicating; instead, we create spaces in which all individuals—deaf, hearing, and otherwise—have a role in the design of communication” (n.pag.). As disability studies (DS) scholars argue, creating accessible content that centers disability (e.g., captioning all media) can be beneficial to all audiences and participants (Butler, 2017; Hitt & Garrett, 2014; Palmeri, 2006; Price, 2011; Price & Kerchbaum, 2016).

It is at this intersection of subtitling, captioning, linguistic transitions, and disability studies that my attention to creating bilingual digital media and conducting bilingual, accessible digital research has been recently emerging. As a bilingual technical communication researcher and translator who publishes digital research in both Spanish and English (see Gonzales, 2017; Gonzales, 2018), I have been grappling with the task and potential of establishing practices that allow readers and viewers of my work to both access and engage with the “rhetorical transcription” (Zdenek, 2015) of bilingual research, having the opportunity to experience the transitions between languages that I aim to illustrate in my work. Orienting to translation research through rhetoric, I understand that linguistic movements (e.g., translating across Spanish and English) are more than alphabetic, encompassing the navigation of cultural norms, embodied practices (e.g., gestures), and non-verbal interactions (Butler, 2018). At the same time, as a technical communication researcher, I recognize the need to represent translations in accessible and usable forms, allowing viewers of my work to access the information that I present in my research regardless of (or encompassing) viewers’ preferred communicative practices and dis/abilities. For this reason, as I collected, analyzed, and shared data for various research projects along with Spanish and English speakers, I traced how I navigated publisher requirements, accessibility and technological concerns, and language diversity issues when creating bilingual digital media (e.g., videos). In this article, drawing on narratives (Jones, 2016; Jones and Walton, 2018) from previous projects, I will make a case for the importance of considering language access and accessibility in crafting and sharing digital research, emphasizing how an interdependent (Price, 2011; Price & Kerchbaum, 2016), intersectional (Crenshaw, 1989; Medina & Haas, 2018) orientation to access through disability studies and translation can help technical communication researchers to design and disseminate digital research that is accessible to audiences from various linguistic backgrounds and who also identify with various visible and invisible dis/abilities.

TOWARD INTERDEPENDENT, INTERSECTIONAL TECHNICAL COMMUNICATION METHODOLOGIES

In “Stories of Methodology: Interviewing Sideways, Crooked and Crip,” Margaret Price and Stephanie Kerchbaum (2016) explain that fundamentally, “disability cripps methodology” (p. 20). As Price and Kerchbaum (2016) clarify, “when disability is assumed to be an important part” of a research project (and in their case of a “qualitative interview situation”), the “normative framework [of research] is both exposed and challenged” (p. 20). This exposure allows researchers to further examine (and perhaps begin to dismantle) “the complex rhetorical process” of working

with research methodologies that position “non ‘standard’ English utterances” as “inferior,” and to center the “interdependence” of researchers and participants in making research methods and conditions accessible (Price & Kerchbaum, 2016, p. 23). As Price and Kerchbaum (2016) note, disability studies scholars have long understood the need to crip methodologies as a way to fight “mechanisms of disabled peoples’ oppression” (p. 23).

Disability studies frameworks of interdependency, as Price and Kerchbaum clarify, can render research methodologies that center “care, commitment, and acting with others in mutually-dependent relationships,” where relying on others to access information is not a matter of choice but an intentional, necessary practice (p. 27). Interdependency is “an ethic for intellectual work” in which participants, researchers, and other stakeholders involved in a research project (e.g., audiences and community members) take an active role in making learning accessible for all those involved (Jung, 2014, p. 101).

Working with communities of Latinx organizers, Stephanie K. Wheeler (2017) also highlights the value of embracing research methodologies that center disability, and interdependency frameworks specifically, in research with communities of color. As Wheeler explains, the notion of interdependency through a disability studies framework helps researchers to embrace a research methodology that is inherently polyvocal and multiplicitous, that pushes researchers to work with communities “toward shared values through a variety [rather than a standardized set] of voices, perspectives, and leaders” (p. 91). Through a framework of interdependency, Wheeler (2017) argues that “transformative” work is possible, allowing researchers to “generate the ideas, identities, and capabilities that have the potential to transform goals, self-interests, and institutions” (p. 95). When disability is centralized in methodology, as many DS scholars have shown, research becomes accessible across ability and identity markers (Price, 2011; Wheeler, 2017; Yergeau et al., 2013). Interdependency suggests that researchers, participants, audiences, and communities not only rely but also build on each other through “a dynamic process of recognition and interrelation” that ultimately “make[s] [all] our work possible” (Jung, 2014, p. 101).

The notion of interdependency as central to inclusive research practices also has a long, though differently-named, history in research on language and racial diversity. Critical race theorist Kimberlé Crenshaw (1989) first coined the term “intersectionality” as a way to “contrast the multidimensionality of Black women’s experience with the single-axis analysis that distorts these experiences” (p. 139). Because “dominant conceptions of discrimination condition us to think about subordination as disadvantage occurring along a single categorical axis,” the experiences of multi-marginalized communities, such as Black women, queer and non-gender conforming women, and disabled people of color (among others), are frequently erased and unaccounted for (p. 140). Thus, by pushing researchers to consider marginalization through intersectional frameworks, Crenshaw (2017) continues to explain how “intersectionality is a lens through which you can see where power comes and collides, where it interlocks and intersects. It’s not simply that there’s a race problem here, a gender problem here, and a class or LBGTQ problem there. Many times that framework erases what happens to people who are subject to all of these things” (n. pag.). Through this focus on intersecting identities and power dynamics, the concept of intersectionality allows researchers to account for the intertwining (and I argue, interdependent) layers

of experience, history, power, and positionality that take place as individuals navigate communication and action across contexts. Through intersectionality, we can develop research practices that are interdependent, specifically by centering the ways in which issues of gender, class, language, race, and ability intersect in the experiences of multi-marginalized communities. This work in intersectionality is especially important when analyzing language difference and movement (i.e., translation), for, as African American Language scholars have shown, race, power, and language are always inherently tied and intertwined (Baker-Bell, 2013; Gilyard, 2016).

In their contribution to the 2018 *Association for Teachers of Technical Writing Conference Plenary*, Cruz Medina and Angela Haas drew on Crenshaw's definition of intersectionality to emphasize the need for technical communication research to move beyond a single categorical axis in both research and practice. As Haas (2018) clarified, "Given the calls for technical communication instructors and practitioners to be global citizens, public intellectuals, ethical rhetoricians, and advocates for our users and communities, technical communicators have a responsibility, the privilege, and skills to intervene in global and local technical communication problems at macro and micro levels in the face of asymmetrical power relations and limited agency" (p. 5). Through their presentation, Medina and Haas (2018) asked the field of technical communication questions such as: "How might we make our work more intersectional? And how might we do so in a way that recognizes how identity, power, and literacies interface with and have rhetorical roots related to the politics, possibilities, and precarities of specific places and spaces within larger networks and systems?" (p. 5).

Taking up Medina and Haas' attention to the need for intersectional work in technical communication, as well as embracing the exigence of this special issue in connecting disability studies more directly with technical communication research, I argue that connecting technical communication's growing efforts to center linguistic and cultural diversity with the ongoing work of disability studies scholars who center interdependent research methodologies can provide one avenue for technical communication researchers and practitioners to continue working toward the creation and dissemination of accessible tools, technologies, and practices. As Stephanie K. Wheeler (2018) explains, embracing intersectional disability studies frameworks in contemporary research methodologies can give "rise to the urgent need for the inclusivity of underrepresented or neglected perspectives, voices, and bodies to achieve everyday rhetorical resistance" (p. 87). This push toward inclusivity and agency is of increasing importance in technical communication research, particularly given the fields' recent and powerful social justice turn (Agboka, 2013; Walton and Jones, 2013; Jones, Walton, Moore, 2016; Moore et al., 2017).

METHOD: A CASE STUDY OF ACCESSIBLE MULTILINGUAL CONTENT CREATION

During the period of 2014-2017, I worked with two communities of translators to trace the processes and practices of language transformation. Drawing on my own background as a bilingual, immigrant, visibly able-bodied technical communicator and translator, I came into this project interested in learning how bilingual and multilingual communicators coordinate and navigate various digital and non-digital platforms, resources, and practices

to transform information from one named language (e.g., English, Spanish) to another. While I was initially focused primarily on the transformation of alphabetic, written and spoken language, I soon realized that, as many scholars have shown, communication is an embodied experience (Dolmage, 2009; Fox, 2013; Pigg, 2014; Rose & Cardinal, 2018), particularly for communities of color (Haas, 2012; Ríos, 2015). As Gabriela Raquel Ríos (2015) explains, "Indigenous peoples have historically used music, dance, theater, and other types of nontextual practices to make meaning, and we still do" ("Performing," 89). Further, as Dolmage (2009) also clarifies, the extent and methods through which people can and do embody rhetorical practices such as communication depend on issues of access and dis/ability.

As I began to trace processes of translation at my two research sites, I immediately noted the interdependent relationship between spoken, visual, and embodied communication in translation practices, as translators "employ any available mode to communicate, using their bodies, drawing figures, texting, singing, dancing, chirping, clapping, whistling, twirling, laughing—all to help each other overcome complex linguistic negotiations" (Gonzales, 2018, *Sites*, p. 10). Further, because I work with communities of Latinx translators, many of whom also identify as immigrants and who also identify with many different dis/abilities, I also noted the ways through which my participants' intersectional identities influenced their approaches to language transformation. As I note in my discussion of "A Revised Rhetoric of Translation" (see Gonzales, 2018, *Sites*), translation processes and practices, particularly when

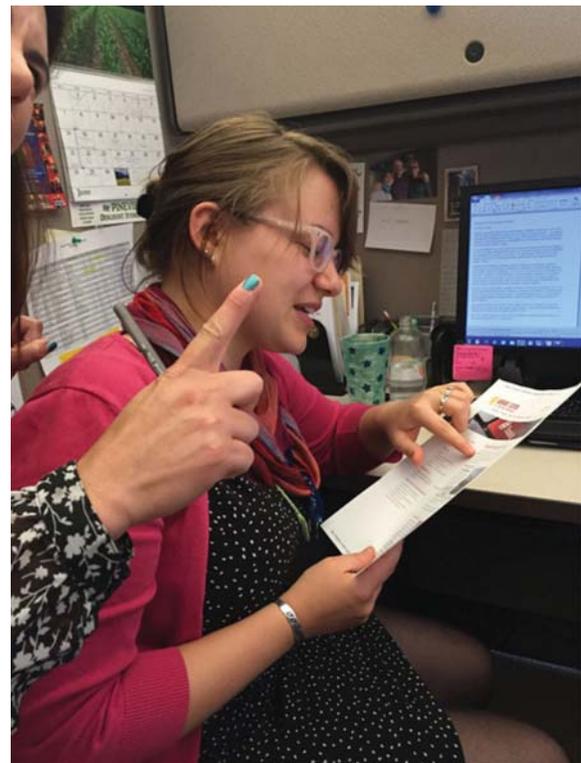


Figure 1: Amy and Sara gesture as they translate. Image description: One woman, seated in her office cubicle, holds a piece of paper with one hand and points with her index finger at some words on the paper. Another woman's hand is visible in the foreground, her index finger raised. Photo by the author.

they are enacted by communities of color, cannot be extracted from the material conditions (e.g., physical and mental dis/abilities, physical places and spaces), histories, and experiences of both the translators and the communities for which this translation work is completed.

For example, Figure 1 (originally published in Gonzales, 2018, "Translation as Technology") depicts two women translators, Amy and Sara, as they complete a translation for their organization's website. Amy, a white-presenting woman with blonde hair, sits at her computer holding a paper that contains a translation. Her index finger points to a spot on the printed paper. Another translator, Sara, stands behind Amy and can only be partially seen. Sara is pointing her index finger up as she consults with Amy regarding their translation project.

To begin this translation project, Amy sits in front of a computer screen completing the alphabetic translation. At the same time, Amy uses a printout of the translation to see how the visual elements of the website correlate (or not) with the written translation. When Amy has doubts regarding her translation, she consults with her colleague, Sara. Sara walks over to Amy's computer, looks at both the computer and the printed version, and then begins to have a conversation with Amy where she switches and blends Spanish and English to derive at translation options. While all of this is going on, Sara and Amy both use their fingers to point at different spots on the written translation, moving their fingers back and forth as they envision and discuss different sentence structures for the translation. All of these strategies, as well as Amy and Sara's relationship, histories, and experiences (including their navigation

of the translation office space as visibly able-bodied women) influence the resulting translation.

Over the course of three years, I observed, recorded (through various modalities) and studied translation projects with translators like Amy and Sara. In total, I worked with 44 participants to record over 3,000 translation activities (Gonzales, 2018, *Sites*). Drawing on methods and methodologies from rhetoric and composition and technical communication, I traced translation activities by video recording translators as they completed their work, recording their computer screens to trace how translators coordinated digital technologies to transform information across languages while also recording the physical space in which this translation work was happening. In addition, I conducted artifact-based interviews with translators, during which my participants and I collaboratively analyzed translation activities and strategies by watching, listening to and/or reading, and discussing the video recording of their translation activities.

In identifying, tracing, and later publishing about translation strategies, integrating video recordings helped me visualize the various resources that translators used to complete their work, helping me move away from the privileging of alphabetic texts in the translation process toward a more contextualized analysis of the resources and strategies that translators use in their daily activities (Rose & Cardinal, 2018). As Rose and Cardinal (2018) clarify, video methodologies allow researchers to "account for the dynamism of human experience beyond words," and I argue, across languages (p. 11). Because the purpose of my project is to illustrate the importance and value of language accessibility



Figure 2: Katie uses facial expressions and gestures when translating. Image description: Eight consecutive stills from a video showing a translator, Katie, making different facial expressions that reflect her increasing confidence over time. Original video and still collage by the author.

by showcasing how translators provide access to information for Spanish-speaking communities in the US, using visual and digital methods such as video recordings allowed me to further consider how including non-alphabetic representations of my research in publications could impact the ways in which readers and viewers access my work. As I learned through this analysis, translation activities frequently encompass numerous tools, strategies, and practices that are dependent on factors such as the complexity of the specific translation, the translators' training, dis/abilities, and previous experiences, as well as the physical space and context in which the translation project was being completed.

To help readers and viewers of my work to understand the complexity of translation activities, I used my video data to create brief, collated video montages to share as part of my publications. The video representations of data were intended to expand and attend to the situated and embodied nature of composition (Butler, 2017; 2018; Fleckenstein, 2003; Yergeau et al., 2013). For example, in my book (Gonzales, 2018, *Sites*) which is a published (alphabetic/print) monograph that includes accompanying digital content and that is also published open-access online (https://www.press.umich.edu/9952377/sites_of_translation), I incorporate two brief (4-6 minute) video montages that illustrate how translators moved in their physical space as they completed translation projects. While translators sometimes worked alone at their computers to complete translations, they would also frequently move their bodies in various ways for various purposes, pointing to different portions of their screens, reading translations aloud to see if they "sounded right" when verbalized, as well as moving around the room to consult with other translators regarding the translation of a specific word or phrase. It was through disability studies work that I came to understand the interconnections between embodied and linguistic movements and the histories and experiences of the Latinx communities that I had the privilege to work with.

Figure 2 represents a collage of still shots from one video montage (originally published in Gonzales, 2018, *Sites*, p. 73), where a participant, Katie, makes a sequence of facial expressions (moving from what can be described as a hesitant or confused look to a confident expression with broad hand gestures) as she works through a verbal translation.

In Figure 2, Katie, a Latina with shoulder-length brown hair, is depicted in eight consecutive still shots that should be read from left to right. In the first still, Katie looks confused and pensive, as her lips are pinched and her eyes are looking up. As Katie continues thinking, on the fourth still-shot, her eyes and eyebrows perk up, arguably signaling the moment when she recognized how she wanted to voice her translation. By the eighth still shot, Katie is confidently speaking, gesturing broadly with her hands and fingers while looking directly at the camera once she recognizes and embraces her preferred translations. It's important to note that in the first still shot, Katie is trying to come up with words in English to explain what she is thinking. Beginning with the 4th still shot, Katie is told (by me as her interviewer), that she can respond in Spanish, and it was at this point that Katie began to deliver her response in Spanish while also exhibiting more confident embodied gestures through the firm movements of her hands and her direct eye contact with the camera.

As Figure 2 illustrates, incorporating visual representations of my research with translators was an integral component in showcasing the complexity of translation work, allowing me to

visualize the rhetorical navigation of language that translators practice as they make information accessible across languages for various purposes. As Sauer (2003) emphasizes, paying attention to embodied communication such as gestures can allow technical communication researchers to "organize, dramatize, reflect upon, and understand" language through non-verbal communication as well as verbal utterances (p. 257). At the same time, as disability studies researchers also emphasize, it's important for researchers to acknowledge embodied movement in our participants' communicative strategies while also recognizing that disabilities (visible and invisible) are always influencing the types of movements that humans engage in to create rhetorical impact (Cedillo 2018; Kerschbaum, 2015). As I learned through this project, embodied, visual, verbal, digital, and non-digital elements in translation have interdependent and intersectional relationships that influence both the processes and products of translation. The embodied practices of translators can be linked to translators' experiences and histories, and can also be very easily overlooked if translation is understood through alphabetic language alone (Gonzales and Zantjer, 2015). For this reason, threading disability studies' ongoing attention to embodiment, dexterity, and mobility with translation and language diversity scholars' attunement to racial and cultural practices can be a productive avenue for reimagining access in technical communication research. Working through this project with attention to interdependent and intersectional frameworks in both disability and translation studies prompted me to trace my own process in learning to produce digital research that was not only accessible to viewers of Spanish and English, but that also complied with general publication standards for online journals and venues that produce digital scholarship in the field of technical communication.

Thus, as I worked to edit, revise, and eventually publish the videos that accompany my book project and other accompanying articles to illustrate translation, I tracked my own processes in creating and revising digital compositions, collecting video clips, versions of transcripts, correspondences with editors and reviewers, as well as audio recordings of three additional artifact-based interviews that I conducted with three of my bilingual participants to further discuss the representation of their translation practices through my videos and accompanying publications. During these interviews, I wanted to understand how the decisions I was making regarding accessibility through practices like creating captions and descriptive transcripts may impact the presentation of information in two languages at once, particularly as participants code-switched and/or blended both Spanish and English (translanguaged) in both their written and verbal translations. Through these conversations and through the tracing of different versions of the videos and transcripts as I moved through the publication process for one book and several articles (Gonzales, 2018, *Sites*, Gonzales, 2018, "Translation as Technology," Gonzales, 2017, "Using ELAN), I sought to further understand 1) If (and how) digital compositions (i.e., videos) can include captioning that is both accessible and bilingual and 2) If (and how) issues of technological literacy, language diversity, and accessibility can be approached in technical communication through an emphasis on both translation and disability studies.

Although I did not formally code my tracing of these composing processes or the additional artifact-based interviews, in the sections that follow, I draw on these experiences to present data narratives and make recommendations that begin to unpack how technical communication researchers can further engage with

issues of accessibility and language diversity in digital publishing. As Jones and Walton (2018) argue, narrative methodologies allow researchers to “consider their relative positioning” in order to “see themselves and their work as relational” (p. 243). By sharing three data narratives that illustrate my process in designing accessible and bilingual digital content, I seek to highlight the interdependent and intersectional relationships of disability studies and translation. Although the data narratives and the processes described therein are not exhaustive or fully-representative of the connections between disability studies and translation, my goal is to use narrative and highlight these experiences as a way to further extend a dialogue about the important intersections between these areas of research and practice within (and beyond) the field of technical communication.

DATA NARRATIVE 1: CREATING BILINGUAL CAPTIONS

One of the decisions I had to make most frequently regarding captioning and subtitling was how to address issues of translation and accessibility simultaneously when publishing videos. In addition to deciding how to caption non-verbal and verbal interactions in videos (Butler, 2018), working with bilingual participants meant that I had to consistently decide how and what to translate at various points in my analysis, and how to represent these translations in accessible ways for viewers of this work. For example, in the two video montages that I include in my book, participants switch back and forth and also blend different Spanishes and Englishes as they complete translations for different purposes. Using translation strategies like reading aloud, gesturing, and storytelling, translators in the videos use different varieties of Englishes and Spanishes while also engaging in various body movements and expressions (see Figure 2).

When compiling the videos of these translation strategies for publication purposes, relying on subtitles (i.e., “on-screen translations of the spoken language”) alone would immediately require that I assume the language preferences and proficiencies of my intended audience, perhaps subtitling all Spanish text into English for an English-speaking audience (Zdenek, 2015, p. 35). To make these videos accessible to deaf or hard-of-hearing viewers, I could then provide closed captions (i.e., “full complement of sounds, both speech and nonspeech”) in separate tracks on my videos, one in Spanish and one in English (Zdenek, 2015, p. 35). While this combination of subtitles and captions may have enhanced accessibility for some viewers (and may be a completely viable option for other projects showcasing bilingual research), because the purpose of my video montages was to illustrate the complexity of translation activities, keeping Spanish and English separate, while also keeping non-verbal and verbal descriptions separate (through a separation of captions and subtitles) felt to me like it would flatten (rather than highlight) language complexity (Gilyard, 2015). That is, although subtitles would provide translations of the video content for viewers, sometimes, the purpose of the video was to illustrate the tensions that happen when specific translations are *not* available, and the rhetorical navigation that translators have to engage in (using their bodies and other tools) in order to communicate during translation.

For example, Figure 3 includes three screenshots from a video montage in which one of my participants, Graciela, discusses her translation work during an artifact-based interview. In these screenshots, Graciela sits in a chair in the translation office, looking

into the camera as each of her hands makes the shape of a rectangle. In the video, Graciela connects both pieces of the rectangle (i.e., her hands) by bringing her hands together. At the bottom of the screen, a green subtitle reads, “yo soy la que conecta los,” which is the beginning of the Spanish translation for what Graciela was saying during this interview. The literal translation of “yo soy la que conecta los” is “I’m the one who connects the.” In the video, Graciela verbally stated (in English), “I’m the one who connects the bridges together” as she described her work as a translator.

In order to draw attention to Graciela’s gestures, in subtitling this shot, I provided the translation for the beginning of Graciela’s statement, “I’m the one who connects the,” while also allowing the gesture of the bridge that Graciela made with her hands to represent the intersection of the word “bridges” in both Spanish and English. I omitted the translation of the word “bridges” in the subtitles in order to allow Graciela’s gestures to provide the translation. In collaboration with the editors who published this piece, I decided to provide both subtitles that provided Spanish translations for the English content and English translations for the Spanish content, while also omitting some words in order to highlight the visual elements like Graciela’s use of the gesture for “bridges.” In addition, although providing closed captions was not possible or necessary on this particular publication platform, I also included a full descriptive transcript to accompany the video, in which I described all images on-screen as well as the gestures (i.e., Graciela, makes rectangular gestures that come together into the shape of a bridge as she states, “I’m the one that connects the bridges together”). In this way, I attempted to make this content accessible to blind users and to deaf users who can access the accompanying full descriptions of this video.

My subtitle choices in the shot depicted in Figure 3 were intended to showcase the importance of body movements in translation work. By omitting the word “puente” or bridge from the subtitle, I may have limited the accessibility of this video for Spanish-speaking viewers to some capacity, particularly for viewers who do not speak English and who are deaf or hard-of-hearing. However, in Spanish, the word “puente” does not have the same metaphorical connotation of bringing things together that the English word “bridge” does for English speakers in the US. The word “puente” might be interpreted by Spanish viewers (without the assistance of Graciela’s gestures) as an overpass, and therefore may not be an effective metaphor for translation (see Leppihalme, 1997 for a discussion of the difficulties of translating allusions). Thus, for some Spanish-speaking viewers, Graciela’s gesture might be more effective than the use of the word “puente” itself. I also recognize, in retrospect, that I could have included a visual caption rather than alphabetic text to represent Graciela’s use of the word “bridges” in this particular case (Zdenek, 2015; 2018).

As Price and Kerchbaum (2016) emphasize, “there is no such thing as an objectively ‘accessible’ video, even if it is captioned and described (Kleege, 2016; Zdenek, 2015.)” (n.pag.). Thus, while there may not be an absolutely correct answer to how I should have gone about captioning and subtitling these videos, and I am by no means claiming that my decisions in this process were the most effective, I recognize that the decisions I made in publishing these videos and working to enhance their accessibility inherently pushed me to privilege one set of viewers or practices over others. While I am not and would not claim to be sure that my subtitling and description decisions were the most effective for this particular project, the purpose of this narrative is to illustrate how an interdependent and



Figure 3: Graciela gestures “bridges.” Image description: Three consecutive still shots from a video in which a woman interpreter connects her hands in rectangular shapes to illustrate “bridges.” The same subtitle is printed on the bottom of each still: “Yo soy la que conecta los.” Original video and still collage by the author.

intersectional orientation to technical communication research can reveal rigorous and important dimensions and challenges for consideration in technical content production. The notion of interdependence through a disability studies framework helped me recognize the intertwined nature of myself as a researcher, my participants, and the viewers of this work, acknowledging our shared responsibility to and co-reliance on accessibility in these videos (Jung, 2014). Likewise, an intersectional understanding of race, language, class, and disability helps me consider how power, privilege, and positionality (Jones, Walton, Moore, 2016) come into play while both creating and accessing digital technical content. These considerations led me recognize that segmenting language and dis/ability may not have been the most effective option for enhancing access to the broader arguments about translation in this research (and arguably in technical communication more generally).

DATA NARRATIVE 2: TECHNICAL SKILLS AND LANGUAGE COMPETENCY

While I consider myself to have equal proficiency speaking Spanish and English, as I began to record videos and other digital elements that helped me trace and visualize translation, I had little to no training in using video recording and editing software, and even less training in creating digital materials that would be accessible to (and representative of) viewers and participants with a wide range of dis/abilities. I decided to video record translation activities not because I wanted to get into film or video-making, but because I knew that I would need a multimodal way to represent the dynamic processes that multilingual communicators engage in as they translate information. Frameworks of interdependence and intersectionality position language, culture, race, and dis/ability in constant relation, and part of the goal in my research is to highlight these connections as they are enacted through the work of translators. Video recording data to incorporate non-verbal modalities like gesturing, facial expressions, and intonation into my analysis of translation thus seemed to be a viable option for showcasing these multimodal connections, even if I did not initially have the technical skills to represent this work. As Rose and Cardinal (2018) explain, “video as a research tool enables and enacts [an] emic perspective by providing a glimpse inside the worlds of our users, to reveal the people, their frustrations, tasks and lives,” of our participants (p. 17).

Drawing on disability studies scholarship, I also recognized that visual data such as that provided by video recordings would help me make an argument for the wide range of rhetorical abilities that are demonstrated by communicators who don’t always feel comfortable using speech as their most dominant mode of communication (Butler, 2017; Price & Kerchbaum, 2016). For example, in their discussion of engaging with qualitative interview data, Price and Kerchbaum (2016) draw on Brenda Brueggemann (1999) and other feminist disability scholarship to emphasize “the oralist/auralist conventions” of traditional qualitative interviewing, urging disability studies scholars to embrace research through “sideways, crooked, and crip” methodologies that decenter ableist conventions in data collection and analysis (n.pag.). This emphasis on non-verbal communication is also prominent in technical communication scholarship, particularly in work that emphasizes the importance of analyzing gestures (Sauer, 2003) and creating visualizations to communicate complex information in technical environments (McNely, 2015; Pigg, 2014). At the same time, however, as Yergeau et al. (2013) remind us, “multimodality has been discussed at length as a means to enhance access to the public and private spaces through which we and our writing move,” but “multimodality as it is commonly used implies an ableist understanding of the human composer,” and I argue, of the researcher, participants, and their relationships (n.pag.). Thus, as I engaged in video methodologies through interdependent and intersectional frameworks, it was important to consider accessibility not only from a technical perspective focused on enhancing accessibility, but also from a relational space that centered my participants, their lived experiences, histories, and embodied realities, as well as the power dynamics that inevitably shaped our collaboration.

As I began video recording translation activities to render visual representations of my data, I encountered several tensions as I negotiated data collection with digital content production. For example, I realized early on that the best spatial and physical locations for translation were not always (if ever) the best spatial

and physical locations for recording quality footage. Because I was recording translation activities in impromptu moments that took place in busy, small offices often packed with people, I did not have the luxury of hooking up microphones to each translator who came into a recording, and I did not always have the chance to manipulate elements like lighting and sound in a translation environment. Furthermore, because I was working with Latinx communities in translation offices that welcomed community clients into their space, I was not always able (nor would I want) to control who walked into the translation office, and I did not want my use of recording technologies to interfere with the comfort level that community members might feel when entering the office space.

At the same time, I found that the environments with the most noise and people, and perhaps not with the best lighting, were those that included intense discussions about the translation of a specific word or phrase for a specific community. Much like the image portrayed in Figure 1 with Amy and Sara, complex negotiations in translation often took place in lively conversations among more than one translator cramped into a cubicle, collaborators who coordinated multiple resources, abilities, and experiences to complete their work. Thus, just as I had to make decisions in my captioning that would invariably privilege either Spanish or English, I often had to make decisions in the recording of video footage regarding what aspect of the activity I would want to highlight, and how much (if any) of the recorded footage I would want to make public (despite my having IRB approval to publish all recordings). In many cases, I could either create a less authentic environment that would allow me to have suitable conditions for video recording, or I could allow translators to continue working in their preferred environment, where the most intricate and interesting work would frequently take place.

Recognizing my relationship with participants as an “interdependent collaboration” (Price & Kerchbaum, 2016, n.pag.) meant that I moved beyond only considering my own research goals and objectives when choosing my method/ology, and that I should do whatever possible to ensure that participants had an opportunity to represent their work for themselves on their own terms. A disability studies orientation to this research allowed me to “foreground concerns such as reciprocity, representation, and accessibility” (Garland-Thomson, 2011, p. 21) as they intersect with the technical components of my project. All of these considerations are directly grounded in power structures influenced by and across gender, race, and class dynamics, particularly as I came into this project as a researcher from an academic institution working with Latinx communities whose traditions and experiences have historically been colonized and fetishized through Western paradigms (Agboka, 2013; Patel, 2015). Thus, beyond institutionalized approval mechanisms like getting IRB approval to record in the translation space, engaging with participants in this project through interdependent, intersectional frameworks meant that I worked to consider our collective goals, objectives, and access simultaneously and at each stage of the research process.

Ultimately, out of approximately 400 hours of video data that was collected and analyzed for my book project, for example, I chose to only publish 8-minutes of video footage (Gonzales, Sites, 2017). A majority of the footage collected was deemed unacceptable for public dissemination because it did not meet production standards and digital publishing style guidelines or because I did not feel like it would be ethical to share based on inclusion of participants’ personal content. While most of my footage was

not publicly shared with broader audiences through publications, this footage still contains valuable stories that illustrate translators’ relationships to each other and to their work. This footage, although not part of the “official” publications or productions of this project, still impacted the analysis of translation practices and the relationships that lead to my understanding and (re)presentation of translation. Thus, orienting to the creation of digital materials through an interdependent and intersectional framework in this project provided additional possibilities for acknowledging the rhetorical power of non-normative communicative practices, even if these practices are not always polished and available for public viewing in standardized, normative (ableist) ways. Multimodality, specifically visual/digital methods as they were enacted through this project, required a close interrogation of dis/ability, power, agency, and consent—elements that technical communication scholars are increasingly highlighting in their work. As Jones (2016) reminds us, technical communicators “must examine the design and dissemination of communication critically with a focus on understanding how oppressive conditions can be rearticulated and reinforced” (p. 346). Connecting interdependent and intersectional frameworks through a focus on translation and disability studies can thus help technical communicators to “fully understand, appreciate, and address the social contexts” in which our work operates, recognizing how our own goals as researchers are in constant relation with our participants and our surrounding communities, contexts, and lands (Jones, 2016, p. 344).

DATA NARRATIVE 3: RIGHTS AND REPRESENTATION

In choosing to video record translation activities, it was important for me to not only visualize the tools and technologies that translators navigated in their daily activities, but to also find ways to incorporate the translators themselves in the analysis and representation of data. In technical communication, the move to incorporate participants in research design has been historically valued through frameworks like participatory design (e.g., Rose & Cardinal, 2018) and action-based research (e.g., Blythe, Grabill, Riley, 2008), which are employed by technical communication researchers to “increase agency,” “create empathy,” “check assumptions,” and “increase rigor” in the design and dissemination of new tools, technologies, systems, and pedagogies (Rose & Cardinal, 2018, p. 17). In disability studies, scholars such as Obermark and Walter (2014) (among many others) also advocate for the need to write with rather than merely about disabled communities (p. 63). While I am not attempting to co-opt disability studies scholars’ ongoing and longstanding work to include and center people with disabilities in disability studies research, engaging with disability studies scholarship throughout this project did help me recognize how each translator’s individual training, history, and orientation to language may influence their approach to translation activities. Although the participants included in this article do not identify with visible disabilities, often-invisible factors like trauma, oppression, anxiety, depression and their corresponding repercussions do come into play in translators’ daily work (Kaplan, 2009; Kaufert & Putsch, 1998; Mitchell, 1998). As such, it is important that I include translators’ own perspectives and histories within my recording of translation activities. Furthermore, because I was tracing translation processes in small, community-driven businesses and organizations for my projects, I recognized that asking translators to participate in my study would be asking them to contribute their already-limited time and resources into the completion of my project. Thus, as I began

building relationships with participants that would eventually lead to the completion of my data-collection period, we collectively decided that rather than anonymizing my data, participants would be represented by name within the publications that stemmed from this project. This included keeping my participants' real names in my book manuscript, while also keeping the names of the organizations with which I partnered to complete this project. In this way, when pointing to their own contributions to our project (for the purposes of marketing, grant proposals, and reporting), participants could cite their own names and institutional affiliations in published research.

The decision to keep participants' and organizations' names in digital publications led to the need to complete several additional layers of permissions, beginning with the original Institutional Review Board (IRB) clearance for the project as a whole, which required additional language on the informed consent documents that would be incorporated into the project.

Further, for every publication about the project, additional consent was gathered from participants, both to ensure that participants were still willing to have their names included in a publication and to take into account any name and/or affiliation changes that took place from the time data was collected to the time of publication. These recursive consent practices (Livingston, 2015) were especially important when sharing written and digital data created with vulnerable populations to be published through an open-access platform.

In addition to ensuring participants' and organizational consent throughout the publication process (and not just before and during data collection), the fact that the book manuscript stemming from this project would be published open-access in digital form led to added considerations regarding the *Creative Commons* Licensing. For example, I was given the choice to select the type of Open Access License that would be used for my book manuscript, ranging from the most restrictive CC-BY NC-ND license which only permits others to download and share work without making any alterations to the content to the least restrictive CC BY license, which allows the public to "remix, tweak, and build upon" your work, distributing new iterations for any purpose, including for commercial reasons (Creative Commons). While I was advised to follow in the tradition of Creative Commons licensing for academic books by choosing a restrictive licensing option, I soon learned that in order to incorporate permissions for my work to be translated into other languages, I would have to choose the least restrictive Creative Commons license form. In other words, for Creative Commons licensing purposes, translations are deemed adaptations of a particular work, and thus, if I want to allow my work to be translated, I have to allow for all other types of adaptations to be made, even for commercial purposes. This means that if I want to allow the organizations for which my participants' work to translate their own labor in my book manuscript, I also have to allow for the public to make other adaptations and extensions to our collective work and to the representations of multilingual participants.

Notions of privacy, disclosure, and consent have long been questioned and highlighted by disability studies scholars who recognize the need to "rethink research, questioning and pushing on how we do research and what we value in our scholarly and pedagogical practices" (Hitt & Garrett, 2014). The notion of interdependency inherently pushes researchers to consider, as Price (2011) explains, the tough spaces and decisions in methodology

"where questions arise, where researchers and participants must communicate, where compromises take place and participants' decisions will guide and even redirect the course of a study" (p. 205). In the case of choosing to include participants' names in my study and to allow for public manipulation of this project through a different Creative Commons license, I again do not know if the decisions I made were "right." Instead, embracing this type of constant flexibility and (re)negotiation of consent with participants highlighted the intersectional power structures that guide technical communication work, as we negotiate privacy, disclosure, and representation through power structures built on the intersections of race, class, gender, language, and disability.

Further, the negotiation of rights and representations illuminated the interdependent nature of this projects' stakeholders more broadly, highlighting how, as Jung (2014) illustrates, our intellectual work relies solely on the relationships that researchers, communities, lands, participants, and spaces build and sustain collectively (Jung, 2014). As Price and Kerschbaum caution, "Interdependence is a central tenet in DS, focused on care, commitment, and acting with others in mutually-dependent relationships; however, DS scholarship doesn't always acknowledge that asymmetrical power relationships, including those that involve intersectional identities of race, class, gender, sexuality, and different kinds of disability, deeply affect what "interdependence" means in specific situations and how it is practiced (p. 27). In relation to digital bilingual data such as that produced through the projects I outline in this article, considering rights and representation issues was relevant not only in terms of intellectual knowledge, but also in visual representations of marginalized communities and cultural practices, institutional labor, and linguistic knowledge. All of these factors, I argue, should be further considered in the development and dissemination of accessible digital content within and beyond technical communication.

GOALS AND POSSIBILITIES FOR INTERDEPENDENT, INTERSECTIONAL ACCESSIBILITY IN TECHNICAL COMMUNICATION

The data narratives presented above illustrate just a few of the various situations that creators of bi and multilingual digital content may have to navigate in striving to create and share digital information that is intersectionally and interdependently accessible, or that is usable to viewers with various ranges of hearing, visual, and linguistic abilities. These contexts are not unique to me and my own project, but rather represent the many decisions that digital content creators now have to navigate as a result of the constantly expanding discourse and interactive abilities of our viewers. I also want to recognize that the data narratives presented in this article do not incorporate simple solutions or "go-to" approaches for navigating the rhetorical decisions that bilingual digital data creators have to navigate. Rather, following Zdenek's push to not treat closed captioning and other accessibility measures as merely a "legal requirement, a technical program, or a matter of simple transcription," I present a set of goals and possibilities that can be considered in the ongoing design and development of accessible bilingual digital data (p. 1).

Goal 1: Designing for Language Fluidity

While legislation such as the 2010 Communications and Video Accessibility Act established some provisions regarding the closed

captioning of media in Spanish, researchers have also pointed to importance of expanding these parameters to further consider closed captioning standards for additional languages (Zdenek, 2015). Though Spanish closed captioning is now common, captions and transcriptions are often only set to a specific language (e.g., English OR Spanish). In instances when communicators are moving fluidly between languages, English captions of multilingual media will often read something like: [Speaking in Spanish] or [Singing in foreign language]. As technical communicators continue developing methods and practices for captioning digital media for accessibility purposes, it will be useful for us to also consider that boundaries between and across languages are constantly expanding.

There are multiple “Spanishes” and “Englishes” that emerge and are re-shaped on a continuous basis, and communicators who speak both languages may blend or mix their linguistic practices across what may be deemed standard Spanish or English (what García & Li Wei [2014] might call translanguaging). In some cases, as evidenced with my example of the translator, Graciela, specific terms are untranslatable and thus not suitable for literal translation subtitles. Because, as Zdenek, 2015 explains, captioning practices often have an English bias, captioners don’t know or think they are responsible for non-English sounds in movies and TV shows (p. 269). In considering future possibilities for accessible bilingual digital data, acknowledging that language functions outside standardized systems may help us better reach and engage with linguistically and ethnically diverse audiences (Butler, 2018). Such a consideration may require the development of new captioning methods and standards that incorporate translation and localization beyond simple standardized language categories, and increased collaboration among captioners, linguistically diverse audiences, and linguistically diverse audiences who also identify as deaf or hard-of-hearing. By de-centering the current dichotomy between captions and subtitles, between English and other languages, and between deaf or hard-of-hearing and bi or multilingual audiences, and by acknowledging their collective interdependence and intersectionality, we can perhaps begin to envision other “radical alternatives to the taken-for-granted landscape of captioning and sonic accessibility” (Zdenek, 2018, n.pag.). Further, as Butler (2018) explains, “If we can appreciate that embodied captions can benefit deaf and hearing viewers and if we can move beyond seeing captions as accommodations, then we will have overcome the boundaries between modes of communication,” and I argue, between discreet, standardized languages.

Goal 2: Developing Culturally-Relevant Accessibility Policies for Digital Publishing

The data narratives presented in this article echo emerging calls for further considering the connections and interrelations between technical communication and disability studies (Colton & Walton, 2015; Palmeri, 2006). As part of this work, it may be important to further interrogate if and how contemporary accessibility standards (e.g., Plain Language requirements) account for language diversity (Jones & Williams, 2017). In so doing, it will be important to not position language diversity as a limitation (i.e., by perceiving language diversity a disability or positioning disabilities as limitations to digital data production), but rather to embrace asset-based frameworks for approaching accessibility work by establishing policies and practices that leverage the affordances of making content accessible for readers and viewers with a wide range of physical and linguistic abilities. In this way, as technical communication researchers, we can continue working

to create digital content that illustrates the various dimensions of communication that are particularly prominent in contemporary multilingual contexts. Further bridging accessibility and language policy issues in relation to digital content creation can help us to design research that is not only accessible, but also representative of the multiple cultures, communities, and contexts in which technical communication currently functions. As Wheeler (2018) argues, providing “multiple entry points” to research practices by centralizing disability studies methodologies “allows access and inclusion to become the cornerstone foundation upon which effective labor activism and social justice is built, and, by extension, the changes such activism generates” (p. 106).

Goal 3: Recognizing the labor of multilingual digital content creation

Although the data I share in this article is infused with my own communicative and technological limitations, it can be argued that creating bilingual digital data requires labor that should be further recognized in technical communication research. Translating and creating bilingual captioning, embracing digital data collection methods that adequately portray multilingual translation practices, and incorporating several rounds of collaborative consent processes required training and expertise critical to successful multilingual digital content creation. As such, as technical communication research continues highlighting the importance of designing and disseminating accessible content, we should also continue to embrace and develop practices that not only recognize the additional labor of creating bilingual digital data, but that also prepare students, professionals, and researchers to successfully plan for and complete this work (Butler, 2018; Colton & Walton, 2015).

Although the work represented in this article stems from multiple years of building, analyzing, and publishing digital research, the data narratives presented provide just one small glimpse into the complexity of multilingual digital content creation. The interdependent and intersectional nature of conducting research with multi-marginalized communities who identify with various linguistic and cultural histories and dis/abilities leads to critical considerations for technical communication researchers who seek to work collaboratively with participants to design and disseminate accessible and ethical tools and technologies that purposely decenter standardized notions of language, culture, and ability simultaneously. If nothing more, the data excerpts showcased here emphasize a growing need to further consider accessibility issues in technical communication scholarship and practices through a recognition of the intersections between disability studies, translation, and technical content creation. While both technical communication and disability studies scholars have done extensive work to establish practices and standards for designing accessible digital content, the projects outlined in this article present an argument for further considering how language diversity efforts draw from, extend, and depend on technical communication and disability studies research. Through further collaboration, specifically through initiatives like the interdisciplinary work presented in this special issue of *CDQ*, our collective fields can push for a “rhetorical widening” (Zdenek, 2015, p. 19) of the exigence for to creating accessible content, considering the multiple ways in which contemporary audiences can and should be able to engage with the work of our disciplines.

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