

Accessibility Barriers, Conflicts, and Repairs: Understanding the Experience of Professionals with Disabilities in Hybrid Meetings

Rahaf Alharbi*
University of Michigan
Ann Arbor, USA
rmalharb@umich.edu

John Tang
Microsoft Research
Mountain View, USA
johntang@microsoft.com

Karl Henderson
Microsoft
Prague, Czech Republic
kahen@microsoft.com

ABSTRACT

Workplaces around the globe are beginning to rapidly adopt hybrid meetings to conduct, plan, and organize their work. While previous literature explores the benefits and drawbacks of hybrid meetings, the experiences of professionals with disabilities are largely missing. With an orientation towards an accessible future of work, we interviewed 21 professionals with disabilities to unpack the accessibility barriers, opportunities, and conflicts of hybrid meetings. We highlight the creative ways professionals with disabilities developed workarounds and repairs to these accessibility tensions. Our paper expands the understanding of accessibility in hybrid meetings by identifying how the visibility of access labor may be affected by being in the room together with other colleagues or joining remotely. We also observed how hybrid configurations can require navigating accessibility conflicts specific to the location site of each participant. Building from our analysis, we offer practical suggestions and design directions to make hybrid meetings accessible.

CCS CONCEPTS

• **Human-centered computing** → **Empirical studies in accessibility**.

KEYWORDS

hybrid meetings, accessibility, disability, future of work, remote work

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1 INTRODUCTION

Given the COVID-19 pandemic and the global stay-at-home orders, work-related meetings were predominately held online using video

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conferencing (VC) software such as Zoom and Microsoft Teams. In response to this rapid transition, professionals with disabilities adopted various workarounds to reconfigure at-home workspaces and address inaccessibility issues in VC [25, 45, 69]. Hybrid meetings, which involve a mix of in-person and remote attendees, represent yet another point of transition for professionals with disabilities. With the goal of supporting inclusive and accessible workplaces, we complement and extend past literature that primarily focused on fully remote [26, 41, 45, 57, 69] or collocated [16, 72] settings, uncovering the opportunities and drawbacks of hybrid meetings.

Prior HCI literature highlighted the unique joys and frustrations of hybrid meetings *without* accounting for the experiences of people with disabilities. Hybrid meetings are thought to offer more flexibility which contributes to increased wellbeing [28, 44]. However, hybrid meetings involve a wide range of social and technical pitfalls. In-person attendees of hybrid meetings frequently dominate the conversation, excluding remote attendees [59]. Conference rooms are often designed for fully in-person meetings, making poor audio quality a prevalent issue in hybrid meetings [59, 77]. While hybrid meetings are regarded as the future of work-related gatherings [5, 75], their accessibility implications have yet to be investigated. From this vantage point, we pose and explore the following question: what are the experiences of professionals with disabilities in hybrid meetings?

We report on findings from 21 semi-structured interviews with professionals with disabilities. Our analysis illustrates that hybrid meetings present both accessibility shortcomings and opportunities for professionals with disabilities. Some access barriers include difficulty with recognizing meeting attendees, increased captioning error due to poor audio, friction with determining turn taking, and loss of optimal at-home set up. As our participants have different types of disabilities, we reveal moments when one professional's accessibility need becomes an accessibility barrier for another professional (i.e., access conflicts). Despite the complexities of accessibility in hybrid meetings, our analysis emphasizes access benefits for professionals with disabilities. We detail how professionals with disabilities repair and negotiate access tensions in hybrid meetings.

This study has three main contributions. First, we present empirical data on the experience of professionals with disabilities in hybrid meetings. We add to the growing body of literature on workplace accessibility [25, 45, 69] and distributed meetings [59, 60, 77], unpacking the unique and amplified accessibility advantages, barriers, and conflicts of hybrid meetings. Our analysis calls attention to how professionals with disabilities repair tensions in hybrid meetings, distributing accessibility responsibilities among colleagues and deliberating power dynamics. Second, to provide an in-depth

understanding of accessibility in hybrid meetings, we situate our findings through the lens of invisibility and visibility, describing how both states lead to experiencing access benefits and harms in hybrid meetings. Further, we explain how hybrid meetings, which allow for the choice to attend in-person or remotely, can be an accessibility resource. Third, we offer practical recommendations and design directions to support the accessibility of hybrid meetings.

2 RELATED WORK

Our work builds from prior literature on distributed meetings, disability practices and disclosure at work, and accessibility.

2.1 Remote and Hybrid Meetings at Work

During the COVID-19 pandemic and the global stay-at-home orders, workplaces (and meetings) experienced a drastic shift from fully in-person to remote, requiring VC software to conduct meetings. While the pandemic increased the popularity of these meeting configurations, HCI scholarship has been investigating fully distributed (i.e., remote) and partially distributed (i.e., hybrid) meetings for over 30 years [35, 53, 54, 77]. Researchers articulated the many social and technical facets of remote and hybrid meetings. Past studies focused on understanding how professionals use technologies during in-person meetings [36], and what types of technologies work best in remote and/or hybrid settings [55]. With the COVID-19 pandemic and the rapid switch to fully remote meeting, video conferencing software had various drawbacks such as difficulty with hearing meeting attendees because of low-quality audio [42]. Hybrid meetings involve a set of unique and amplified issues [60]. Compared to fully remote gatherings, hybrid meetings often involve technical failures that are hard to detect. For example, because conference rooms are traditionally designed for fully in-person meetings and may not be equipped with microphones [60, 77], remote attendees are more likely to experience low audio quality that in-person attendees are largely unaware of, so the meeting continues as normal [59]. In hybrid meetings, remote and in-person attendees' communication is considered asymmetrical. Past literature highlighted that because remote attendees are subject to delay, in-person attendees tended to dominate the conversation [13]. Consequently, remote attendees often felt marginalized and left out [59, 60]. Saatçi et al. surfaced the "moral problem of remoteness" which describes the guilt remote participants feel in hybrid meetings due to technical shortcomings (e.g., remote attendees feel like it is their fault that failures such as delay occur) [59]. Despite their complexity and technical difficulty, hybrid meetings have positives such as providing flexibility [28], which leads to better working conditions and increased wellbeing [44].

2.2 Accessible Workplaces & Meetings

We begin by reviewing disability-related practices at work. Then, we unpack literature on the accessibility of distributed meetings.

2.2.1 Disability & (In)Visible Access Work. A number of studies have investigated the experience of professionals with disabilities at work to understand access tensions. Overall, they found that accessibility efforts are lacking [16, 31, 39]. When employers discuss diversity and equity efforts, disability and accessibility is often left out [19]. Lengnick-Hall et al. emphasized that managers hold ableist

assumptions that portray professionals with disabilities as unable to complete required tasks and might require additional costs to cover assistive technology and health insurance [43]. To subvert harmful stereotypes, some professionals with disabilities developed strategies to avoid disability disclosure and associated stigma. Past literature highlighted that people with disabilities might accept sub-optimal accessibility conditions at work. For example, people who are hard of hearing might try to "pass" as hearing and pretend to follow along a conversation to minimize discrimination [6, 34]. Neurodivergent¹ people are often misunderstood and ignored [12, 24]. For instance, autistic professionals often feel the pressure to mask and conceal coping mechanisms (known as 'stimming') to avoid being marked as "weird" and further stigmatized [30]. Overall, professionals with disabilities are forced to navigate marginalizing workplaces, placing frictions around disability disclosure and communicating accessibility needs.

HCI scholarship has studied the intersection of technology and disability at work. Past literature highlighted both the technical [16, 68] and social [16, 25, 64] access barriers, particularly noting how these barriers tend to co-construct each other. Many workplaces routinely use technologies that are not accessible for people with disabilities [16, 25]. For example, companies might require using technologies that are not compatible with assistive technologies such as screenreaders. While past studies emphasized that creating accessible workplaces is *everyone's* responsibility [39], the burden of establishing, repairing and maintaining accessibility (i.e., access labor) often falls solely on people with disabilities. Branham and Kane showcased how Blind professionals perform additional and invisible access labor that is not apparent to colleagues [16]. Focusing on the accessibility of collaborative writing platforms for professionals with visual disabilities, Das et al. portrayed how the labor of access is often both visible (e.g., educating sighted coworkers) and invisible (e.g., emotional work of negotiating tradeoffs when advocating for better accessibility) [25]. Building from Star and Strauss' theorizing of visible and invisible work [67], Wang and Piper illustrated how dyslexic writers artfully negotiated if and how to make their disability visible to colleagues to then redistribute labor among authors [73]. Disability studies scholars and activists conceptualize disability (and access labor) as a dynamic process in relation to people, structures, and environments [37, 56]. Using such sensibility, prior HCI and CSCW research emphasized the urgency of rethinking accessibility in the workplace as individually enacted and maintained, towards building systems that facilitate collectively co-creating access, including professionals with and without disabilities [8, 10, 15, 16, 25, 72, 73]. In this paper, we draw from past scholarship to uncover the (in)visibility of access labor in hybrid meetings and how both professionals with disabilities and colleagues come together to repair accessibility barriers and conflicts. We assert that professionals with disabilities still bear much of the burden, negotiating power dynamics of when and how to call

¹Broadly, a neurodiversity framework acknowledges that there are many neurological differences in the human population, including those who are "typical" (i.e., neurotypical) and "atypical" (i.e., neurodivergent) [65]. The term neurodivergent includes autism, learning disabilities, attention-deficit/hyperactivity disorder (ADHD), chronic psycho-social disabilities such as depression, bipolar disorder, obsessive-compulsive disorders and many others [48, 66]. While beyond the scope of the paper, we encourage readers to engage with critical work on the benefits and tensions of the neurodiversity framework [58].

out accessibility failures and educating coworkers on accessibility practices.

2.2.2 Accessibility of Distributed Meetings. Long before COVID-19, professional with disabilities advocated for remote work options to improve workplace accessibility and were denied [21, 38, 50, 63, 71]. Today, as COVID-19 safety precautions (e.g., mask mandates) are mostly lifted, people with disabilities worried about the subsequent removal of virtual options. For that reason, disability advocates and communities call to continue providing remote opportunities [4, 20, 71, 76]. Our work responds to such calls by exploring how hybrid meetings could be an accessibility resource, enabling diverse modes of participation (in-person and remote) that have accessibility benefits for many professionals with disabilities

In comparison to the wealth of literature on people without disabilities, very little HCI scholarship explores the social and technical dimensions of distributed meetings and accessibility. Past papers focused on how people with disabilities experience remote work broadly, including access barriers and facilitators that occur in remote meetings [26, 45, 57, 69]. Tang reported that people with disabilities faced accessibility challenges when using VC tools [69]. Particularly, Tang highlighted the added cognitive labor that professionals with disabilities experience: Blind professionals performed additional work to navigate VC using a screen reader while simultaneously listening to a meeting, Deaf and hard of hearing professionals needed to manage complicated visual layouts to view both closed captioning and American Sign Language (ASL) interpreters, and neurodivergent professionals mentioned difficulty with distributing attention to various channels (e.g., chat and screen-shared materials). In a mixed-ability autoethnographic study of a virtual internship, Mack et al. illustrated a number of tensions around remembering (and reminding attendees of) the agreed upon accessibility practices, spotlighting the power dimensions of calling out inaccessibility during remote meetings [45]. A number of studies focused on specific disability populations to uncover access tensions during fully remote work and meetings. Neurodivergent people negotiated various stressors [78] and advocated for accessible meeting practices [26]. Deaf and hard of hearing experienced challenges related to lipreading with insufficient lighting [41], errors with closed captioning [47], and difficulty with managing delay [57]. Overall, past work focused on the accessibility considerations of fully remote meetings. Hybrid meetings have similar and unique accessibility implications that are largely unknown. We aim to contribute to this body of research through investigating the specific accessibility opportunities and barriers of hybrid meetings.

3 METHOD

3.1 Recruitment & Participation

Our recruitment criteria were that participants self-identify as having a disability, be at least 18 years old, live in the United States or the United Kingdom (as the authors' were most familiar with these contexts and have disability contacts in these regions), and attend hybrid meetings "regularly" (i.e., had enough experience to talk about hybrid meetings). From June 2022 to July 2022, we conducted remote semi-structured interviews with 21 professionals with disabilities. The interviews lasted from about 50 to 95 minutes

Table 1: Summary of participants' disability and most frequently used video conferencing software (alphabetically ordered) to conduct hybrid meetings.

ID	Disability	VC Software
P1	ADHD and learning disability	MS Teams, Webex, Zoom
P2	Legally Blind	MS Teams
P3	Neurodivergent and chronic illness	MS Teams
P4	Hard of hearing	MS Teams, Zoom
P5	Totally Blind	MS Teams, Webex, Zoom
P6	Autism	Zoom
P7	ADHD and physical disability	MS Teams, Zoom
P8	ADD, hard of hearing, and low vision	MS Teams
P9	Legally Blind	MS Teams
P10	ADHD and physical disability	MS Teams, Webex, Zoom
P11	Hard of hearing and physical disability	MS Teams
P12	Legally Blind	Google Meet, Zoom
P13	Totally Blind	MS Teams, Zoom
P14	Deaf	MS Teams, Zoom
P15	Autism	MS Teams
P16	Physical disability	Zoom
P17	Totally Blind	MS Teams
P18	Deaf and hard of hearing	MS Teams, Zoom
P19	Low vision	MS Teams
P20	Chronic illness	MS Teams, Zoom
P21	Deaf	Zoom

in length. We posted a recruitment message and survey on various social media sites and email listservs. The recruitment survey confirmed eligibility to participate. We also asked about type of disability, VC software(s) used, and example of accessibility barrier experienced in a recent hybrid meeting. To ensure diversity in our data, we included optional gender and age questions. We reached out to eligible survey respondents and were able to schedule 21 interviews that were later transcribed for data analysis. Following some recommendations from Mack et al.'s [46] findings on making interviewing methods accessible to participants, we inquired about access needs before and during interviews. At times, we made access changes (e.g., turning on closed captioning, providing ASL interpretation, and sending a copy of interview protocol). After the interview, participants were compensated with a \$40 (USD) gift card as appreciation for their expertise and time. This study was approved by our research ethics board.

Overall, in terms of disability, 8 participants are Blind or low vision (BLV), 7 are neurodivergent, 5 are Deaf or hard of hearing (DHH), and 6 had mobility disability or chronic illness. Participants had experience with VC software such as Zoom, Microsoft (MS) Teams, Google Meet, and Webex. Table 1 reflects participants' disability and the VC software they frequently used. Regarding gender, twelve participants are women, eight are men, and one participant is non-binary. From the 20 participants who reported their age (one participant did not disclose), age ranged from 21 to 52 (average: 39). Our participants worked in a variety of fields such as academia, finance, arts, and technology. To preserve anonymity, we refer to professionals as "P#" and use they/them/theirs pronouns to report findings.

3.2 Procedure

3.2.1 Semi-structured Interviews. We followed a semi-structured interview approach to allow participants to freely reflect on their experiences in hybrid meetings. The interview focused on uncovering access barriers and opportunities, inquiring about accessibility workarounds, and reflecting on how hybrid meetings might be different than fully remote or fully in-person setting. Generally, the semi-structured interviews included questions on: 1) their work to build rapport and understand their workplace, 2) how they feel about the transition to hybrid meetings, 3) access barriers and opportunities in hybrid meetings, and 4) collaborating in hybrid meetings. For reference, the semi-structured interview protocol can be found in the appendix.

At the end of each interview, we wrote a detailed memo. If necessary, we modified, and adjusted our questions to account for emerging themes or improve language for clarity. With the participants' consent, all interviews were audio-recorded and transcribed for analysis.

3.2.2 Data Analysis. To analyze our data, we took a reflexive thematic analysis approach [17, 18]. After a two week period of data familiarization that included reading transcripts and listening to audio recordings, early analysis focused on the experience of hybrid meetings with a broad focus on interacting with VC software and meeting dynamics (e.g., moderation and facilitation). The first author refined codes iteratively based on (re)reading transcripts and weekly discussions with co-authors. Through closely examining codes and excerpts, we narrowed the focus to cover the technical and social aspects of accessibility in hybrid meetings. We generated initial themes around access barriers, opportunities, conflicts, and workarounds. The first author repeatedly went back to transcripts and searched for quotes that support (and complicate) these themes.

Reflexive thematic analysis embraces positionality. Authors in this study have lived or professional experiences with disability and/or hybrid meetings. We also understand disability (and accessibility) as relational configurations that are built by people, structures, and institutions [10, 37, 56]. This view extends and complicates medical views that paint disability as a deficit. It also allows us to think about accessibility beyond its technical components and towards recognizing how accessibility is co-created by community members [10, 56].

4 FINDINGS

In this section, we focus on the experiences of professionals with disabilities in hybrid meetings to reveal the various accessibility challenges around identifying meeting attendees, experiencing audio quality issues that amplify closed captioning error, negotiating turn taking, and losing access to an ideal at-home set up. We articulate the access conflicts that emerge in mixed-ability environments as access needs might clash with each other (e.g., around the use of smart cameras and captioning). While hybrid meetings involve accessibility drawbacks and conflicts, our data also highlight access opportunities that positively impact professionals with disabilities. Lastly, our analysis describes how professionals with disabilities repair accessibility gaps in hybrid meetings, negotiating tensions around communicating access needs and distributing access labor among colleagues.

A recurring theme in our interviews was how professionals with disabilities experience different access barriers and opportunities depending on whether they join hybrid meetings as remote or in-person attendees. Throughout our findings, we call out details of how their accessibility experience was shaped by which hybrid meeting site they were participating from.

4.1 Access Barriers of Hybrid Meetings

We detail the unique and amplified accessibility hurdles of hybrid meetings. These challenges included difficulty knowing who was present and speaking, magnified closed captioning mistakes, friction with taking turns, and losing access to at-home assistive devices when attending hybrid meetings in-person.

4.1.1 Recognizing Meeting Attendees. Some DHH and BLV participants mentioned difficulty recognizing who is present and speaking during a hybrid meeting, especially when working with new colleagues with unfamiliar voices and speaking patterns. Social practices, such as knowing your colleagues' name and attributing their ideas, are important for fostering an inclusive and collaborative workplace [51, 70], so not being able to identify colleagues could put professionals with disabilities at a disadvantage. Past work pointed out that fully remote meetings offer an accessibility opportunity for people with disabilities to easily recognize who is talking through highlighting videos of active speakers and including names [69]. However, in hybrid meetings, DHH professionals, as both remote and in-person attendees, and BLV professionals, as in-person attendees, could not easily recognize meeting attendees.

When attending a hybrid meeting remotely, DHH professionals lose social cues that help with recognizing active speakers (e.g., everyone often directs their gaze at the speaker). Because of the small video image of in-person attendees, it is hard to decipher who is talking among the in-person group. P21 who is Deaf and uses ASL, told us "[w]hen I am in-person, I have that 180 degree view so I can see the interpreter signing and I can see at the side of my eye who is talking. The people in the room all tend to look towards the person who is talking, so that helps me identify who's speaking. But through Zoom I can't look at who's talking." Because the video image of the group of in-person attendees in the grid is small, it is difficult to visually identify which individual is talking. P4, who is hard of hearing, practiced "speech reading" (a combination of using closed captioning and lipreading) during remote and hybrid meetings. In fully remote meetings, they said "video is highlighted and the caption mentioned who's speaking" in some VC software that offers speaker identification. However, as a remote attendee in hybrid meetings, P4 said they could not easily infer speakers because captions do not attribute names to the in-person attendees, it only denotes the "conference room [number] and there's a bunch of people saying random things in a meeting with captions." While only a few VC tools offer speaker identification in closed captioning, none has introduced the ability to attribute the names' of in-room speakers. This makes it difficult for professionals who attend hybrid meetings remotely and use closed captioning to recognize the in-person contributors.

When attending in-person to a hybrid meeting, DHH professionals often have to exert additional cognitive effort to know who is talking in comparison to fully in-person or fully remote settings. As

an in-person attendee to hybrid meetings, P4 also joins the hybrid meeting from their laptop to view closed captioning. However, this workaround is cognitively taxing and makes it difficult to keep up with who is talking. They told us *"I'm sort of navigating both looking at the [conference room] screen and online. So, it gets hard for me to check speaker identity"* (P4, hard of hearing). For DHH professionals, hybrid meetings demanded added effort to recognize active speakers in comparison to fully-remote settings which have design affordances to support speaker identification and fully in-person settings which have social practices to detect who is talking.

When attending a hybrid meeting in-person, some Blind professionals mentioned that it was difficult to tell who was present among the remote participants. P17, who is Blind, elaborated *"I don't know what is going on with the remote participants. I know who's in the room. I know when they're coming, when they're leaving, when they're paying attention, when they're not paying attention, when they're involved or not involved, and with the remote people, I have absolutely no idea what's going on."* Blind professionals could be addressing a remote attendee only to realize that they have left the meeting. When asked if also joining the meeting online could be a potential workaround, Blind professionals emphasized that it would be a distraction and a hassle. P17 explained: *"I have to mute myself. I have to mute the speaker. All of these actions are a nuisance"* (P17, Totally Blind). Navigating overlapping audio sources from the screen reader and in-person meeting attendees requires significant cognitive effort. Alternatively, some Blind professionals suggested social practices that might enhance accessibility. P5 said *"when they're speaking saying their name [...] I think it helps not just Blind folks, but people in the room. It helps them to be conscious of who is coming in the meeting..."* (P5, Totally Blind). For Blind professionals who attend hybrid meetings in-person, recognizing remote attendees may be challenging. Simple social changes like saying your name before speaking emerged as an access practice in fully remote meeting [45] and should be continued in hybrid meetings.

4.1.2 Audio Quality Issues & Captioning Error. Many of the conference rooms do not have external microphones and are generally not designed to support hybrid meetings, resulting in remote attendees receiving poor audio. These failures affect everyone but have further negative implications for people with disabilities who use closed captioning and attend hybrid meetings remotely. Beyond being annoying, low quality audio worsens the accuracy of closed captions and demands additional cognitive effort from professionals with disabilities. When asked about the one thing they disliked the most about hybrid meetings, P7 who uses closed captioning and has ADHD, audio processing disorder, and a physical disability, told us *"the biggest thing for me is hearing issues."* Recalling a past hybrid meeting that had poor audio quality, P7 said *"as soon as someone turned away or was in the back of the room, or didn't speak clearly, I literally could not understand what they were saying"* (P7, ADHD and physical disability). In-person attendees are likely too far or turned away from the microphone, so their voices are not captured properly, leading to closed captioning errors and putting a strain on professionals with disabilities who are attending remotely. As P8 summarized, *"if the mic doesn't pick up the audio properly, definitely you can't read [closed captioning]. And if that person is not on the screen, you could not do any lip reading."* (P8, ADD, hard of

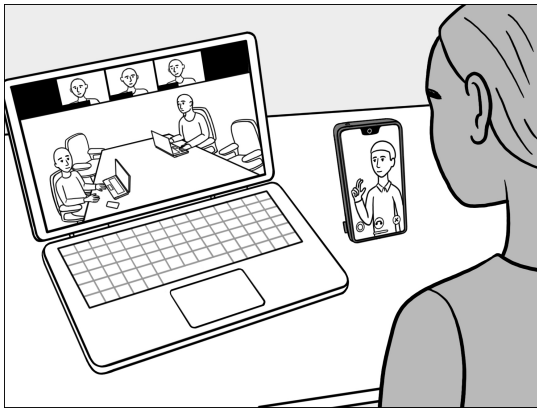
hearing, and low vision). For that reason, P14 described changes hybrid meetings organizers could implement to make communication flow more accessibly between in-person and remote attendees, including having a *"high quality microphone or set of microphones"* and making *"sure that no one's back is at the camera in that meeting"* (P14, Deaf). Overall, even if the audio quality might be good enough for hearing people, it often generates poor closed captioning. This is made worse when in-person attendees are not speaking directly to a microphone and turning their faces away from the camera. Consequently, the accuracy of closed captioning suffers drastically in hybrid meetings, negatively impacting professionals with disabilities who attend hybrid meetings remotely.

Interestingly, while not necessarily attending to disability and access needs, past work on fully remote meetings reported that attendees would turn on closed captioning as a workaround for poor audio quality issues [42]. Yet in hybrid meetings, our findings emphasized that poor audio quality, compounded with in-person attendees speaking away from microphones, worsened the accuracy of closed captioning for remote attendees.

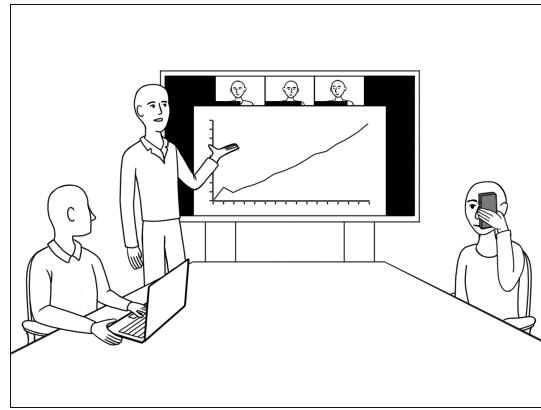
4.1.3 Negotiating Turn Taking & Delay. Issues with turn taking are a common pitfall of hybrid meetings. While this hardship affects everyone (regardless of ability status) [60], participants surfaced unique access barriers when assessing turn taking in hybrid meetings. Findings highlight how technical aspects (e.g., small video image for in-person attendees and delay) interact and collide with certain communication patterns that are inaccessible to some professionals with disabilities (e.g., overlaying on body/facial cues and not taking pauses). This leads to problematic turn taking practices in hybrid meetings.

To illustrate these socio-technical tensions, we turn to P6, who is an autistic professional that often attends hybrid meetings remotely. They told us that neurotypical communication (e.g., relying on non-spoken cues such as body language) is a general access barrier that is often amplified during hybrid meetings due to small video images that do not clearly capture in-person attendees' facial and body expressions. P6 noted *"one of the things I have difficulty with is knowing when it's my turn to talk so like people will ask questions, and I will cut off their conversation"* (P6, Autistic). Inadvertently, P6 would end up dominating the conversation, leaving other meeting participants frustrated. Clashes with turn taking may induce additional stressors to neurodivergent people [25, 78] to the point where they might need to exit the meeting altogether. P3, who is neurodivergent and has audio processing disorder, recalled a hybrid meeting experience where they joined remotely and in-person attendees were speaking over each other, causing a significant access barrier. They told us *"I couldn't follow along properly. I ended up with a migraine afterward because I was trying to keep up with it all. There's too much noise and too many different threads of conversation going on at the same time."* Going through a migraine is not a trivial experience; it often persists for multiple hours and would likely adversely impact upcoming work and social interactions.

DHH participants who attend remotely also noted tensions with turn taking in hybrid meetings because in-person attendees tended to speak over each other. While cross-talk might generally be a sign of high and positive engagement [62], it creates barriers for



(a) Deaf ASL user attending a hybrid meeting remotely: the sign language interpreter interacts only with P21 on a separate external device, and is not a participant in the meeting itself



(b) Low vision user attending a hybrid meeting in-person: to better view shared content on a conference screen, P19 joins online to use assistive technology (magnification) on their mobile device.

Figure 1: Illustration of participants' access barriers in hybrid meetings: (a) joining as a remote attendee and using video relay services for ASL and (b) joining as an in-person attendee and using a mobile device to magnify shared content

DHH professionals. Accordingly, it is often a norm in Deaf communication to pause, avoid overlapping speech, and strategically use eye gaze to negotiate turn taking [7, 22] whereas "hearing people tend to talk over each other, so there's no clear delineation and turn taking." (P21, Deaf). DHH professionals remarked that fully remote meetings helped hearing people unconsciously adopt the practice of pausing by being a forcing function for everyone "to speak one at a time" (P14, Deaf). However, in-person attendees of hybrid meetings spoke over each other more frequently when compared to fully remote settings because "online it is hard to speak over people [...] Like, people physically mute and unmute. It is not just an instant element" (P4, hard of hearing). Additionally, the lack of clear turn taking causes increased closed captioning errors. As P18 told us "I usually have to punch in at some point and say I need to stop the meeting right now and say that when you cross-talk, the captioning can't pick you up" (P18, Deaf and hard of hearing). For some professionals with disabilities, the inaccessible communication style of hearing and/or neurotypical people (e.g., assuming others will understand your body language, avoiding pauses and speaking over each other) leads to tensions in turn taking.

Delayed communication between in-person and remote attendees is a facet of hybrid meetings that contributes to friction in turn taking. Communication flows smoothly among the in-person attendees. However, communication between in-person and remote attendees is delayed. Thinking back to a hybrid design workshop they attended remotely, P3 described issues of delay in terms of "the rate of the conversation." In-person attendees seemed to be actively ideating, whereas remote participants were subject to delay and could not seamlessly interject. P21, who is Deaf, experienced access barriers because of delays. P21 attends hybrid meetings remotely and often uses free Video Relay Service (VRS)² to communicate via ASL. While traditionally helpful for phone call conversations, VRS

is difficult in hybrid meetings because interpreters are not part of the meeting itself but are in a separate video call (as demonstrated in Figure 1a), experiencing two layers of delay. P21 explained "there's like a two or three second delay with the interpreter listening to the message, processing it, and interpreting it. At the same time I'm behind, so I won't be able to put my own input into the meeting" (P21, Deaf). P21 is already experiencing delay by joining remotely with an added delay due to using VRS. Additionally, this delay is not visible to meeting attendees because VRS is on a separate call, so meeting attendees cannot see when the interpreter has finished signing. By contrast, in-person participation in hybrid meetings is "a lot easier" (P21, Deaf) because issues of delay are more visible, so everyone can co-manage them.

4.1.4 Losing At-Home Set Up When Attending In-Person. Upon the switch to remote work, professionals with disabilities optimized their workstations at home to accessibly attend meetings [26, 69]. With the transition to hybrid meetings, many participants who attend in-person discussed barriers due to losing their home setup and experiencing stigma when using assistive technologies. Specifically, professionals who are legally Blind or have low vision adopted a large desktop display in their home office to comfortably view shared content and read chat entries. P9 who is legally Blind said they used "really large monitors to make it easier to see [shared content]" as they could comfortably magnify it. Obviously, it is highly impractical to carry these large screens to conference rooms. Some participants brainstormed ways to make a portable setup. P12, who is legally Blind, said "I have a lot of equipment. I have a friend that jokes about the amount of stuff that I bring. So, I have [a large 17-inch] laptop. And I have this stand for the laptop that raises [...] as well as a mouse." Nevertheless, P12 told us that this setup is not perfect. They explained "[w]henver I work on a laptop, I'm going to be less effective. It causes more eye strain" (P12, legally Blind).

²VRS is different than Video Remote Interpreting (VRI). To learn more about VRS: <https://www.fcc.gov/consumers/guides/video-relay-services>

Instead of carrying a setup, P19, who is low vision, joins via phone to magnify shared meeting documents when attending hybrid meetings in-person. At the surface, hybrid meetings introduced an access opportunity for P19 to magnify screen-shared materials compared to fully in-person meetings where they could only magnify content if they had a copy of presented materials. However, this also introduced some harm because using phones in meetings could be interpreted as being rude. P19 recalled a meeting where an attendee "[made] wonderfully horrible comments about how it would be great if everyone was paying attention and staying off their phones. And I don't want to interrupt a meeting and be like 'I'm not being rude, you're being inaccessible to me right now. So like, you're failing, not me'" (P19, low vision). As demonstrated in Figure 1b, there is a contrast in how low vision or legally Blind professionals use devices to view shared content compared to sighted or non-disabled colleagues who may visually experience the content on a screen in the conference room. This difference might prompt attendees who have a narrow understanding of engagement to make insensitive comments.

To combat such assumptions, P2 who is legally Blind, told us that even though they use a laptop when attending in-person, they felt a need to disclose their access considerations to assure meeting attendees that they are paying attention. They explained "I tell the presenter in the room: '[h]ey, I'm going to look at my screen because I can't see what's on the projector. I'm gonna zoom in on mine. I'm gonna listen and I'm gonna engage. I'm gonna be an active participant, but it's gonna look like I'm not.'" Professionals with disabilities, who use assistive technologies when attending hybrid meetings in-person, may be placed in a predicament. They could either disclose their access needs to attendees and use their personal devices or they might risk being marked as rude or distracted.

4.2 Access Conflicts & Opportunities

Access conflicts, where one person's access need or preference becomes an access barrier for someone else [33], often occur within mixed-ability communities. In contrast to fully remote meetings where access conflicts did not typically arise as a concern [69], we reveal unique access conflicts that appear in hybrid meetings. While our analysis has largely focused so far on the access barriers and conflicts, we also identify accessibility benefits that make hybrid meetings highly preferred among participants when compared to fully in-person or fully remote settings.

4.2.1 Smart Cameras. The latest technology for hybrid meetings is smart cameras that detect and spotlight active speakers who are in-person to remote attendees [2, 3]. Some participants commented on the benefits and harms of smart cameras. Our findings highlight access conflicts when using smart cameras.

Neurodivergent participants who attend hybrid meetings remotely discussed how smart cameras might help understand social cues, especially when negotiating turn taking in hybrid meetings. Smart cameras offer a closer view than traditional cameras, enabling participants to clearly view an individual in-person attendee's facial expressions and thus understand social cues a bit better. Accordingly, smart cameras are an access preference for some neurodivergent professionals. P6, who is autistic, said that in hybrid meetings that do not have smart cameras available, they found it "a little

bit more difficult" because they could not easily assess turn taking and negotiate social norms when attending remotely. Similarly, P7, who has ADHD, physical disability, and an auditory processing disorder, found smart cameras to be beneficial. With the smart cameras' ability to individually spotlight the active speaker's face, P7 reflected "seeing the person's face helps me pair that with what I remember their voice sounds like. And then I think it's easier for me to pick up on what they're saying if that makes sense." Overall, P6 and P7 experiences with smart cameras helped address some access barriers in hybrid meetings by making in-person attendees more visible.

However, some participants noted that smart cameras lead to further access barriers. For example, P20 has chronic illness and motion sickness. They often request that meeting attendees "keep the computer on a flat surface" because movement and vibrations make them "super nauseous and dizzy [to the point of wanting to] throw up." They said "[smart cameras] are automatically doing that motion [...] always trying to like adjust the angle a little bit to make sure that the faces are centered and I'm like 'dude no.'" The movement and constant jitteriness of smart cameras is a significant access barrier to P20. During our interview, P20 acknowledged that smart cameras could be "really helpful for people who are DHH who rely on facial cues." However, P20 emphasized that "there are parts of the execution that are just fully inaccessible to me and others. Why did you make this design choice that now made this technology extra inaccessible such as the jittery camera trying to always perfect centering the face rather than stillness." Additionally, some neurodivergent participants found smart cameras distracting, especially when an error occurs. P3, who is neurodivergent, said "[smart cameras] could not follow people quickly enough because there were too many people in different areas [...] so the cameras didn't know who to focus on."

Some participants worried that these smart cameras would fail to recognize them. P20 eloquently captured concerns around misrecognition and bias around smart cameras. They said:

I am immediately skeptical of [smart cameras] because this is like computer vision trying to recognize faces. What messed up bias did they build into the system? is it going to work for people of color? what if someone has an assistive device that covers their nose? [...] People with disabilities are going to get the short end of the stick here.

Indeed, disability bias and injustice are well-documented in algorithmic technologies; there are numerous examples of systems actively discounting people with disabilities, leading to harm and discrimination [9, 32, 52, 74]. Computer vision systems have a particular bias on people with disability, especially wheelchair users [52, 74]. P7, who uses a wheelchair, recalled a hybrid meeting when a smart camera had issues recognizing them. They explained "if you're in-person, you see the [smart] camera zooming. Because I sit in the front with the wheelchair, like I see the camera zooming in on my legs and I'm like this is weird and awkward." When asked to speculate about why this misrecognition occurred, P7 said "[i]t sometimes takes a while. It depends on how high the camera is set in the room. If I'm right in the front row, I think I'm too close to the camera and so then it's like zooms in on some random body part rather than zooming in on my face."

4.2.2 Closed Vs. Open Captioning. An interesting access conflict that appeared for a few participants was around closed captioning (viewed in an individual's personal device) and open captioning (viewed by everyone on shared screen) in hybrid meetings. When attending a hybrid meeting in-person, P4, who is hard of hearing, also joins online to view closed captioning. When asked about using open captioning that is viewed by all on a screen in the conference room, they told us that open captioning led to access conflicts for their colleague *"who gets very nauseous when the movement of captions is [in] their line vision. For [them], it is an access need to not have [open] captions presented."* P4's access need for captioning is an access barrier for their colleague. Indeed, for P20, a professional who has a chronic illness and experiences motion sickness, explained *"I can run into issues if I'm trying to read [captioning]. If I'm actually trying to read and check when I'm working with someone who's Deaf or hard of hearing, [captioning] can get a little weird because it goes back and corrects words prior in the sentence like shifts around things. So, like, I do struggle to read the captions."* While joining the meeting online does help P4 gain access to closed captioning, it is an imperfect workaround. They explained *"I can't make eye contact with the person who's speaking and sometimes it makes them feel like I'm not listening to them and not paying attention"* (P4, hard of hearing). In addition to potentially appearing distracted, P4 explained that viewing closed captioning on their own personal devices makes it harder for colleagues to track and correct captioning errors. They said *"[with open captions] everyone can see how much [captioning] is behind and what kind of mistakes are being made for the person who's using the captions."* The tension between closed and open captioning appears in hybrid meetings when members with conflicting access needs attend in-person.

4.2.3 Opportunities. Even though all participants highlighted accessibility barriers in hybrid meetings, participants emphasized that hybrid meetings are important to increase accessibility in the workplace. Many noted that hybrid meetings, in and of themselves, are an access need. COVID-19 introduced and normalized remote attendance: a right people with disabilities were long fighting for before the pandemic and were largely denied [21, 38, 50, 63, 71]. P14, who is Deaf and often attends hybrid meetings remotely, shared with us *"people complain about the COVID world, but at the end of the day, it's helped people like me. [...] It changed my career path and made all the difference in my life. Without hybrid meetings, I would not be a functioning at all."* While nearly all P14's team members attend meetings in-person, COVID-19 pushed P14's company to structure their meetings in a hybrid matter. This allowed P14 to remotely attend meetings, utilizing closed captioning to alleviate communication barriers. P19 added that COVID-19 pandemic and the rapid transition to fully-remote meeting *"was a blessing for disabled people, work-wise"* (P19, low vision). And now, with the transition to in-person, many professionals with disabilities are concerned that all remote options would be discontinued. P19 explained *"in my own support groups, we are living in fear on what happens when we go back [to in person]. Do we lose all that progress?"* When we asked participants whether they would prefer to meet remotely, in-person, and hybrid in the future, a majority stressed that hybrid meetings are an important access consideration that can be *"inclusive for everybody"* (P5, Totally Blind).

Participants shared the ways hybrid meetings furthered accessibility at work. Some participants greatly benefit from remote attendance. P16, who has a *"neuromuscular condition, [uses a] a power wheelchair, [and has] motor dexterity issues,"* told us *"the existence of the option to participate remotely is a huge access option"* because it alleviated the burden to commute and they could more efficiently use speech-to-text software to take notes during meetings. Attending remotely in hybrid meetings allowed P7 to comfortably and privately practice accessibility strategies without their coworkers noticing and, subsequently, judging them. They elaborated *"I can do several things at once which helps me actually focus on the virtual meeting and it's not obvious to my colleagues [...] if someone sees me in an in-person meeting [multitasking] it's like, oh, that's rude"* (P7, ADHD and physical disability).

Some participants benefited greatly from attending a hybrid meeting in-person. P16 explained that *"in some cases it's an emotional access need. We saw the negative mental health impacts and the sense of isolation that people felt [...] then there are more practical access [considerations] where it is like I can't focus on Zoom or I can't hear people very well on Zoom. In those cases, having an in-person option does genuinely serve some people's access needs better."* The possibility of attending in-person to a meeting enables certain access gains to some professionals with disabilities such as increased emotional support and improved communication. P4, who is hard of hearing, added that *"in-person can be more accessible for some people. I've found that I just connect with people better when they're in-person. They're more real to me. It is easier for me to speech read when I'm in-person, but at the same time, I can't use captions as easily if I'm in-person and so it's kind of like both options have their own benefits."* Overall, while past work highlighted the benefits of remote participation for professionals with disabilities, hybrid meetings, with the option of participating remote or in-person, provide unique access opportunities for professionals with disabilities.

4.3 Repairing Access

In the face of barriers and conflicts, professionals with disabilities described workarounds to improve the accessibility of hybrid meetings. Some strategies included communicating access needs and distributing access labor. Yet, these tactics added extra labor for professionals with disabilities to negotiate power differentials and educate colleagues.

4.3.1 Negotiating Access Changes During Meetings. Professionals with disabilities asserted that communicating access needs before hybrid meetings is important. Some professionals felt comfortable disclosing access needs with their coworkers. For example, P4 said *"[w]e are committed to accessibility. So we talk about access norms all the time for meetings"* (P4, hard of hearing). P3 added *"there is a culture of inclusion in our team"* (P3, neurodivergent and chronic illness). Professionals emphasized the importance of articulating access needs to coworkers, P2 summarized *"people don't know what they don't know, so it's not their fault if you don't speak up [about access needs]"* (P2, legally Blind). Accordingly, P2 disclosed their access needs in Outlook (email) by clicking *"a checkbox that says I prefer accessible content,"* but it is not visible to hybrid meeting organizers when sending calendar invitations. Some participants emphasized the importance of directly asking about access needs

before meetings. P16 added that in addition to surveying about access needs prior to meetings, facilitators should describe planned activities. They explained “[w]hen I would fill out things about access needs [...] I would never remember to say that I couldn’t write [on physical paper],” so if a facilitator includes examples of planned actions such as “written Post-it note activities” (P16, physical disability) that could help meeting participants’ recall certain access needs.

Further, accessibility should be considered not only before meetings but also during. P4 asserted “access isn’t something you do once, it’s an iterative process” (P4, hard of hearing). Accordingly, P16 added “[meeting facilitators need to be] ready to be flexible” (P16, physical disability) to address access needs as they arise. Communicating access needs frequently and early could mediate access conflicts. For example, P20 was experiencing a bad migraine so they tried to reduce lighting in their environment. However, a colleague who benefits from lipreading could not see P20’s face very well. Their colleague replied “I’ll just read the captions and ask if I have any clarifications.” When two access needs conflict with each other, understanding “how high of a priority of an access need is this is what needs to come into consideration” (P20, chronic illness). Professionals with disabilities underscored the significance of periodically inquiring and working towards access needs both before and during various meetings.

While some participants felt comfortable discussing access, they still had to negotiate power differentials. Professionals who were early in their careers did not feel comfortable requesting access modifications. P7 recalled a moment when they experienced an access barrier in a hybrid meeting and they did not ask for any changes. They noted “I’m relatively junior on council and so I didn’t want to make a fuss” (P7, ADHD and physical disability). Many participants avoided asking for access changes when meeting with senior or external members of the organization (especially customers). Despite being in a supportive organization, P19 detailed “[everyone at work] all know my disability because I’m very honest about it [...] if it were something like a customer or a partner where I didn’t necessarily want to [ask for access changes] because, even though it’s not true, but you do feel like you are showing your company or your team in a bad light” (P19, low vision). Additionally, P11 explained “we couldn’t rely on the [conference] room equipment and anything from the customer side. It was just really difficult and you also don’t want to upset the customer” (P11, hard of hearing and physical disability). Asking for access in meetings with customers and other key stakeholders is a fraught process that involves calculating risk and accounting for power dynamics because “you don’t want to basically embarrass them by calling them out for being not inclusive” (P3, neurodivergent and chronic illness).

Additionally, it is hard to ask for an access change in a hybrid meeting. Some participants told us that it feels awkward to disrupt the flow of conversation and request accessibility modifications. This was especially the case when professionals with disabilities were attending the hybrid meeting remotely. P18, a Deaf and hard of hearing professional, said “[it] feels really awkward to come in to a group [...] and then be like: ‘pardon me, let’s totally change the focus to be all about me.’” P13, a Blind professional, added “I don’t want to be that person that is always interrupting the meeting so I just kind of let it go.” When joining remotely, professionals with disabilities might find it difficult or awkward to request accessibility

modifications due to inequitable asymmetries between in-person and virtual attendees, leaving remote participants to feel excluded in hybrid meetings [59]. Further, meeting moderators might not have the technical skills to provide access. To unpack the difficulty of requesting technical accessibility changes, we highlight the process of asking for closed captioning. P14, who is Deaf and often attends hybrid meetings remotely, told us that their organization does not enable closed captioning in their meetings. P14 explained “I didn’t go through with it and say ‘hey, there’s a way to get captioning, you can double click here.’ I don’t even know the steps. They’ve made it too hard, so I don’t feel like I can advocate for myself on a Zoom call because it’s too hard. Zoom has clearly made an executive decision to make this difficult for people like me” (P14, Deaf). Because the steps to turn on closed captioning on Zoom are complicated, P14 has to put extra effort into closely listening and lipreading. When asked about instructing meeting attendees asynchronously via email, P14 said “I did send instructions to this HR individual saying, ‘hey, here’s how Zoom does it’ [...] But I didn’t get a response.” In a similar case, P18 explained that it is difficult for people to navigate turning on closed captioning on Zoom, so they attend meetings early. P18 detailed “I have to hold their hand through the process of getting them to do that in a hybrid meeting” (P18, Deaf and hard of hearing). These technical difficulties could place those asking for changes in the spotlight in uncomfortable ways. P20 described “you’re going down this rabbit hole of the person trying to figure out how to fix the settings [...] you’re just sitting there like awkwardly with your cheeks burning being like oh God. The attention.” (P20, chronic illness).

4.3.2 Distributing Access Labor. Participants noted that as a result of communicating their access needs, some of their colleagues became actively involved in co-creating access at certain times. That is, the labor of repairing access barriers in hybrid meetings extended beyond the individual towards including colleagues in the process. Many participants told us about reaching out to coworkers who are present in the meeting to resolve access barriers. For example to address communication barriers, P8 explained “I’ve pinged a peer who I know is on the call. Just to clarify. Like, did they just say blah blah?” (P8, ADD, hard of hearing, and low vision). When inaccessible content that could induce motion sickness is presented, P20 told us “I will like message somebody else who I trust in the meeting and be like ‘I can’t watch this. what am I supposed to be getting from this?’” (P20, chronic illness). The ability to have a text side channel to reach colleagues for clarifications is an affordance provided by videoconferencing software, although it is harder to use it to reach co-workers who are attending in-person. Recognizing the advantage of distributing access labor, P16 explained that it is important for hybrid meeting facilitators to make activities collaborative. They said “every activity is inaccessible to somebody” (P16, physical disability) and to mitigate this, meeting facilitators should:

make sure you’re doing it in groups where everyone can have a role, no matter what. If we’re doing a Tower Building task I may not be able to place objects, but I can have opinions [...] I don’t have to like whisper to the person next to me and potentially feel outed or stigmatized.

Because captioning error is likely to occur in hybrid meetings (as detailed in section 4.1.2), some professionals mentioned that they would distribute the access labor of fixing closed captioning error. For instance, recall the access conflict that both P4 and P20 experience around closed vs. open captioning (explained in 4.2.2). Instead of making DHH people individually do the cognitive effort of making sense of closed captioning error, P20 told us that during their meetings they would assign roles to *"watch the captions and correct anything that's egregiously wrong."* In this case, the access labor of interpreting and repairing captioning error extends beyond the individual and is collectively taken upon by various colleagues.

However, distributing access among coworkers has tensions. In addition to the extra efforts and stigma that professionals with disabilities experienced when communicating access needs and educating colleagues about accessibility practices (as explained in 4.3.1), participants discussed the difficulty of maintaining access practices. Corroborating past work [45], some participants mentioned that their colleagues often forgot to follow agreed upon accessibility practices, placing the burden on professionals with disabilities to remind colleagues about access needs. P10, who has ADHD and physical disability, explained *"they'll probably also forget again by the next time we meet because in the 8 or 18 or 80 meetings that happened in between they didn't need to do whatever it was."*

5 DISCUSSION

To summarize our findings, we surfaced the access barriers, conflicts, opportunities, and repairs of hybrid meetings. We found several challenges around recognizing meeting attendees, poor audio quality issues that lead to captioning error, frictions with turn taking and delay, and losing optimal at-home setup. Interestingly, we uncovered access conflicts where the use of smart cameras and captioning became an access barrier for someone else. Lastly, we highlighted the tensions of repairing access barriers in hybrid meetings, explaining the added labor on professionals with disabilities as they co-create access with colleagues.

Building from our findings, we contribute a richer understanding of accessibility in hybrid meetings. We unpack and situate the various types of access labor (i.e., the work required to make systems and environments accessible [10, 16, 40]) in hybrid meetings through the lens of invisibility and visibility, emphasizing how both positions lead to experiencing access benefits and harms for professionals with disabilities. Our analysis supports calls from disability advocates and communities to continue providing remote options as workplaces shift to fully in-person [4, 20, 71, 76], illustrating how *both* remote and in-person attendance are access needs for professionals with disabilities. We provide practical recommendations and design directions to improve the accessibility of hybrid meetings moving forward.

5.1 Understanding Accessibility in Hybrid Meetings

5.1.1 The (In)visibility, Conflict and Co-Creation of Access. Our findings demonstrate the interplay between visible and invisible access labor, noting that visibility and invisibility result in both access opportunities and barriers. HCI literature has studied (in)visibility of disability presentation [29], assistive technology [29], and access

labor [8, 10, 25, 73]. We extend past work by uncovering the tensions of (in)visibility: the visibility and invisibility of access labor hold both benefits and harms in hybrid meetings, but *when* and *for whom?* Revisiting our findings, we found that, at times, the invisibility of access labor obfuscates the mechanics of access, leaving professionals with disabilities feeling left behind and excluded in meetings. For example, because P21's ASL interpreter was hidden from meeting attendees, they could not work toward mitigating the compounded delay (as detailed in 4.1.3). However, the invisibility of access labor was a benefit to some participants. For instance, P7 preferred to join hybrid meetings remotely so they could conceal the access labor of multitasking from their colleagues to avoid stigma. The visibility of access labor caused tensions among some participants. For P21, having the access labor of ASL interpretation visible is valuable so everyone could view and manage delay. Further, some professionals (such as P19) received rude comments about their visible use of assistive technology during hybrid meetings. Our findings draw attention to the complicated access dynamics and (in)visibility in hybrid meetings.

Our analysis reveals access conflicts in hybrid meetings. Because we live and work in a world with mixed abilities, accessibility research encourages understanding access conflicts [33]. Our findings illustrate how the (in)visibility of access labor may contribute to conflicts. For example, making the access labor of captioning *visible* causes access conflicts between professionals who use captioning as an access need and colleagues prone to motion sickness. However, making the access labor of captioning *invisible* from colleagues involves a number of frictions around meeting attendees being unaware of latency and error issues that are frequent in captioning [47]. Further, past work highlighted access conflicts around the (non)use of cameras during fully remote meetings. Das et al. [26] showcased that some neurodivergent professionals prefer to turn off videos to make stigmatized access labor (e.g., stimming) invisible to colleagues. Simultaneously, they also illustrated that some neurodivergent professionals greatly benefit from having videos on to understand nonverbal cues, lipread, and as accountability measures to avoid distractions. Findings from our work indicated that use practices around cameras still persist as an access conflict. Smart cameras are uniquely used in hybrid meetings to spotlight active speakers in the room [2, 3]. While they are helpful for some to understand social cues around turn taking and to effectively lipread, they present access conflicts for professionals prone to motion sickness and may distract some neurodivergent professionals. Most importantly, participants were concerned about potential disability bias in smart cameras. P7, who uses a wheelchair, reflected on how smart cameras would fail to recognize them at times. Unfortunately, disability bias is pervasive in algorithmic technologies and glaringly understudied [9, 74]. We urge the developers of such technologies to critically and ethically reflect on disability representation in datasets used to build smart cameras. Future work could investigate creating disability-centered audits on smart cameras to further expose moments of failure and bias.

To mitigate tensions around the conflict and (in)visibility of access labor, our findings highlight a number of strategies participants used to repair gaps. Corroborating past work [15, 45, 72], our analysis highlights that access labor is distributed among colleagues during various incidents of accessibility check-ins. Access labor is

fluid and dynamic, subject to constant changes as new needs and conflicts arise [33, 45]. With the new transition to hybrid meetings, our findings capture access negotiations and co-creation between professionals with disabilities and colleagues. Instead of bearing the burden of access alone, professionals with disabilities collectively built access *with* their coworkers who might also have a disability or not. The distribution happened on formal and informal levels: from mundane interactions (e.g., texting a trusted colleague who is present in the meeting to receive clarification) to designated accessibility checkers (e.g., a meeting attendee that actively monitors closed captioning errors and correct them in the chat). While it helped shift access labor imbalances, the process of co-creating access is imperfect. Professionals with disabilities still needed to navigate power dynamics when disclosing disability and advocating for access when meeting with senior members or customers. Our data showcased that participants often performed the uncompensated emotional labor of assessing the risks and benefits of calling attention to inaccessible practices and the labor of instructing colleagues on how to make meetings accessible. These added forms of labor, on top of their formal work, could lead to what Konrad coined as "access fatigue" to convey "the everyday pattern of constantly needing to help others participate in access, a demand so taxing and so relentless that, at times, it makes access simply not worth the effort" [40]. Professionals with disabilities needed to expend additional effort to communicate and teach colleagues accessibility practices. As hybrid meetings continue to evolve, emerging technologies must pay attention to how to equitably distribute labor and co-create access.

5.1.2 Providing Both Remote and In-Person Attendance Options Is an Access Consideration. Our analysis shows that joining in-person or remotely in hybrid meetings presented different accessibility opportunities and challenges. Thus, offering a choice to attend remotely or in-person is an access consideration. We move away from designating one mode of attendance as more accessible than the other, and towards recognizing that each mode offers varying levels of access barriers and benefits to different professionals with disabilities, depending on many factors that change dynamically. Workplaces around the world are beginning to suspend remote options. Because hybrid meetings are hard to conduct, facilitators might be inclined to instead have either fully remote or fully in-person meetings. However, echoing and extending disability advocates [4, 20, 71, 76], our empirical data urgently calls to reconsider such decisions because hybrid meetings offer access opportunities for professionals with disabilities.

It is important to avoid essentializing remote attendance as more accessible than in-person participation. Supporting prior literature [8, 10, 33], our data highlight that access needs are contextual and fluid. For some participants, like P21 who is Deaf and uses ASL, attending in-person might enable meeting attendees to collectively manage delay and resolve access barriers. Professionals with low vision greatly benefit from joining meetings remotely. They could comfortably use large monitors to view shared content and avoid stigma for using mobile phones for access. Both in-person and remote attendance offer access benefits for different professionals with disabilities. Allowing for diverse modes of participation in

a meeting is an important access consideration for an accessible future of work.

5.1.3 Practical Access Recommendations for Hybrid Meeting Organizers & Attendees. Drawing from our findings, there are several recommendations organizers may consider implementing to enhance the accessibility of hybrid meetings. We complement and extend guidelines that focus on the accessibility of fully remote settings (e.g., [14, 26, 45, 49]) to attend to the complexities of hybrid meetings. Echoing disability scholarship, we question the idea of "perfect" accessibility checklists because accessibility is a never-ending process that changes when new needs come up [8, 11, 27, 45]. Instead, we encourage readers to engage with the following considerations as a starting point for deeper discussion around accessibility within organizations and mixed-ability teams.

- (1) **Practicing access check-ins.** Accessibility discussions can help group members identify and work together to address access needs [45]. Our findings highlighted several access barriers in hybrid meetings, so organizers might benefit from allocating time before, during, and after the meeting to discuss access. However, as our findings and past work argued [25, 45], these conversations are fraught with unequal power dynamics and might further stigmatize people with disabilities. Organizers could strategically phrase these access check-ins in universal terms (e.g., "are our voices audible?" and "is the font in the slides viewable?"). Also, organizers might allow attendees to privately message them if any access concerns occur during the meeting.
- (2) **Being mindful of conference room technologies.** Many conference rooms might not include important technologies for hybrid meetings (e.g., microphones). Organizers and meeting attendees should familiarize themselves with the technologies available in the conference room, ensuring that microphones are present and working. Identifying where the microphones and audio speakers are located might benefit accessibility. Organizers could reserve seats near audio speakers and encourage in-person attendees to speak in the direction of the microphones to increase audio quality (especially if an attendee is soft-spoken). If the space is equipped with smart cameras, it may be helpful to inform meeting attendees of this technology and offer the opportunity to brainstorm accessibility workarounds if some are prone to motion sickness. Additionally, people could deliberately experience hybrid meetings as in-person and remote attendees to have a baseline understanding of the challenges at each site.
- (3) **Saying names before speaking and verbalizing when entering or leaving the meeting.** Saying your name before speaking emerged as an access consideration in fully remote meetings [14, 45, 49] so DHH and BLV attendees could better know who is talking. Some VC platforms include speaker identification in closed captioning. While beneficial in fully remote meetings, DHH participants who remotely attend hybrid meetings noted that even if the VC software offers speaker identification, it does not support attributions for in-person attendees (as discussed in section 4.1.1). Establishing a norm around saying names before speaking, especially

among in-person attendees of a hybrid meeting, is a simple way to improve accessibility. Also, verbally announcing when entering or leaving a hybrid meeting could help Blind people keep track of active meeting attendees.

- (4) **Taking pauses and minimizing overlapping speech.** Because of delay, in-person attendees of hybrid meetings are prone to dominating the conversation, speaking over each other, and thus excluding remote attendees [13, 59]; this has additional accessibility barriers for professionals with disabilities. As our analysis showed, remote attendees who are Deaf and use ASL might be experiencing two layers of delay due to being remote and interpretation. It is important that in-person attendees intentionally pause and make space for remote attendees to contribute. Further, meeting participants should try to decrease overlapping speech because it negatively affects closed captioning quality.

These guidelines might be hard to implement because meeting attendees may forget these access considerations. In the next section, we discuss socio-technical designs that may encourage group members to develop and adopt accessibility norms.

5.2 Design Directions

Building from our analysis, we offer design directions to foster the co-creation and repair of access in hybrid meetings. While some suggestions may as yet be technically unfeasible or difficult to implement, we still believe there is value in working toward better technologies.

5.2.1 Individual Level: Enabling More Control Over Viewing Experiences. A major access barrier that impacted many of our participants was around facial visibility of in-person attendees. Because their video image was often too small, DHH professionals could not lipread or recognize who is talking. Neurodivergent professionals found it more difficult to interpret social cues and assess turn taking. Giving remote attendees the control to enlarge the video image of in-person attendees may resolve these accessibility challenges. Additionally, our data highlighted access conflicts with smart cameras. Providing remote attendees the choice to opt in or out of viewing the visual rendering of smart cameras could mitigate access conflicts. Designers of smart cameras and videoconferencing software should introduce two modes of viewing video images: dynamic and static. In the same meeting, remote attendees could choose between different viewing modes based on their access needs. Those who experience access benefits from smart cameras can choose to view the dynamic (original) version while professionals who experience access barriers may choose a static version.

5.2.2 Collective Level: Working Towards Access Before, During, and After Hybrid Meetings. Our analysis emphasized the tensions of collectively working towards access needs in hybrid meetings. The process of making hybrid meetings accessible should not be limited by the meeting time itself but also before and after meetings. Our findings highlighted the importance of communicating access needs to distribute accessibility labor among colleagues, noting tensions around disclosing access needs and reminding colleagues about access practices. There are opportunities for future socio-technical

systems that support the co-creation of access in all stages of hybrid meetings.

To understand access barriers and conflicts before a hybrid meeting, socio-technical systems might be built to enable meaningful discussion and negotiation among colleagues. As Hofmann et al. noted, "[s]upportive communication and compromise may convert conflicts to moments for awareness, growth, and creativity across varied disability experiences" [33]. Our data emphasized that actively and frequently inquiring about accessibility needs is a necessary step for identifying conflicts and co-creating access (as discussed in section 4.3.1). Some participants disclosed access needs in their Outlook email profile, and others directly communicated access needs to team members. With the option to remain anonymous, there could be an opportunity to build organizational platforms that enable professionals to share access needs. As hybrid meeting calendar invites are generated, facilitators can view access needs and anticipate conflicts. Professionals with disabilities could also view the list of access needs and conflicts before the meeting. Accordingly, they can make informed decisions on whether they would like to attend the hybrid meeting remotely or in-person. For example, thinking back to the access conflict on captioning (explained in 4.2.2), DHH professionals might prefer to attend the hybrid meeting remotely to better view closed captioning and avoid obtaining open captioning to alleviate barriers if colleagues prone to motion sickness opt to attend in-person. Additionally, having a list of access needs and conflicts visible to all attendees could foster the co-creation of access (e.g., a coworker might adjust their communication style to intentionally pause). The list of access needs and considerations might also increase awareness of disability and accessibility. For instance, to challenge normative assumptions about personal device use and attention in meetings (a stigma BLV professionals experienced as illustrated in 4.1.4), the list might educate meeting attendees around how professionals with disabilities use personal devices for accessibility reasons.

During hybrid meetings, there are opportunities to address access requests as they come up. For example, closed captioning error, cross-talk, and identifying meeting attendees were access barriers for many professionals with disabilities. Organizations should follow general accessible meeting norms identified in section 5.1.3 and past works [26, 45] in addition to developing specific norms relevant to their context. However, attendees might forget to practice these access considerations, putting pressure on professionals with disabilities to calculate the risks of calling attention to inaccessibility. Socio-technical systems could be introduced to enhance accessibility during hybrid meetings. For instance, pop-up messages from VC software to remind attendees to say their names or minimize cross-talk might help support the development and maintenance of these norms. Additionally, there are emerging technologies aimed at improving the accessibility of fully remote and hybrid meetings. Recently, VC platforms made great strides to improve the experience of DHH people by introducing a feature that highlights the video image of sign language interpreters to signers [1, 61]. However, the visibility of sign language interpretation might only be viewable to those who turn it on, making it difficult for everyone (signers and non-signers) to co-manage delay issues that are rampant in hybrid meetings (as detailed in section 4.1.3).

After a hybrid meeting has ended, organizations could elicit feedback on how the meeting with a focus on accessibility barriers. While explicitly drawing attention to inaccessibility practices might further marginalize professionals with disabilities, as our data and past work illustrated [25], systems might be introduced to enhance privacy and reduce risks. For example, automatically generated reports that highlight how much in-person attendees talked over each other and how that was misaligned with pre-established access norms could be beneficial.

5.2.3 Ethical Considerations. Supporting past literature on accessibility and work [16, 25, 45], our paper emphasized that professionals with disabilities primarily bear the responsibility of repairing access barriers. With an orientation towards equally distributing access labor, we offered speculations and design directions for future technologies moving forward. Before building and deploying such systems, it is important that researchers grapple with ethical and privacy tensions. Our analysis asserts that disability disclosure in workplaces is rife with power differentials. Employers already devalue disability ways of working and knowing, relying on ableist understandings of productivity [43]. It is critical that emerging technologies for hybrid meetings recognize their potential use for surveillance purposes [23], further marginalizing professionals with disabilities. We invite researchers to carefully assess the benefits and harms using various methods such as taking a community-oriented approach with professionals with disabilities.

6 LIMITATIONS & FUTURE WORK

Our data revealed the tensions of distributing access labor among colleagues in hybrid meetings. Professionals with disabilities still needed to perform additional labor to educate colleagues and negotiate power dynamics. To further understand how to better co-create access in hybrid meetings, follow-up studies might include the perspectives of coworkers *without* disabilities to investigate frictions.

Our recruitment criteria focused on professionals who have a disability, participate in hybrid meetings, and are in the US/UK. Because there is a focus on participants who already engage in hybrid meetings, there is a self-selection bias and does not capture those who could not partake in hybrid meetings due to significant access barriers. While focusing generally on professionals with disabilities allowed us to identify access conflicts and implications of disability disclosure, it is important that future work investigates the access needs of specific disability communities and design for these contexts. Additionally, while our participants had diverse disabilities and access considerations, our sample is not expansive. People with physical and mobility disabilities were underrepresented in our participant pool and we were not able to recruit within groups such as DeafBlind people, people who stutter, and people who use augmentative and alternative communication (AAC), and more. These groups may have unique access needs and barriers in hybrid meetings that upcoming work should uncover. Also, since accessibility and work practices are shaped by local norms and regulations, it is important to investigate contexts beyond the US/UK to account for cultural factors that mediate creating access in hybrid meetings. At the time of our data collection, hybrid meeting practices were emerging, and they continue to evolve as time goes on. Accessibility

considerations need to be tracked and updated as these practices change.

7 CONCLUSION

Our study investigates the access barriers and opportunities of hybrid meetings. We contribute and extend past work that focused generally on hybrid meetings by centering the perspectives of professionals with disabilities. We complement past accessibility scholarship that focused primarily on remote work and meetings [25, 45, 69], highlighting similar tensions around disclosing access needs and unique conflicts related to smart cameras and captioning. Furthermore, our data asserted that hybrid meetings, with the option to participate in-person or remotely, allow for increased accessibility in workplaces. Building from our findings, we articulated how both forms of visible and invisible access labor result in barriers and advantages. Towards a future of accessible workplaces, we offered practical recommendations and design directions that could improve hybrid meetings for professionals with disabilities.

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A SEMI STRUCTURED INTERVIEW PROTOCOL FOR PROFESSIONALS WITH DISABILITIES EXPERIENCING HYBRID MEETINGS

This an outline of the major questions we hoped to cover. During the semi-structured interview, we were able to follow-up and explore inquiries beyond these specific questions.

A.1 General/Warm-up questions

- (1) Can you please tell me a little bit about your work?
 - (a) What is your role?
 - (b) How long have you been working in this area?
 - (c) What type of organization do you work for?

A.2 Transitioning to hybrid meetings

Thank you for sharing. In this part of our interview, I will ask you some questions about hybrid meetings. By hybrid meetings, I mean meetings that are conducted with participants that are joining remotely and in-person. Do you have any questions about that definition of hybrid before I proceed?

- (1) In general, how has your experience been with the transition to hybrid meetings?
 - (a) So far, have you been joining hybrid meetings remotely or in-person?
 - (b) What is one thing you like about hybrid meetings?
 - (c) What is one thing you dislike about hybrid meetings?
 - (d) When did your workplace began switching back to hybrid meetings?
 - (e) How often do you participate in hybrid meetings?

- (2) Can you tell me about your most memorable hybrid meeting so far. What was the meeting about? How many people were present?

A.3 Access barriers and needs in hybrid meetings

- (1) How would you describe your disability? What type of assistive technologies do you use?
- (2) Can you tell me about the access barriers you experience in hybrid meetings? (Please feel free to include access barriers that are technology-based and ones that are not technology-based but relate more to room structures or people’s behaviors)
 - (a) Are these access barriers similar to the ones you experience in remote meetings? If not, how are they different?
 - (b) Are these access barriers similar to the ones you experience in in-person meetings? If not, how are they different?
 - (c) Have you ever reported a technical accessibility issue to a video conferencing software or someone in your team? How did that go?
 - (d) Have you ever reported a meeting practice accessibility issue (i.e., an access barriers is not technology based but might be related to how the meeting is conducted)?
- (3) How do you go about resolving or addressing access barriers in hybrid meetings?
- (4) Did anyone in your organization reach out about access needs or accommodations during hybrid meetings?
- (5) What tips and tricks would you provide to a newcomer on addressing access barriers in hybrid meetings?
- (6) What tips and tricks would you provide to meeting organizers to create accessible hybrid meetings?

A.4 Collaborations in hybrid meetings

- (1) Are there any norms, rules, or expectations that are explicitly communicated to meetings attendees?
 - (a) How about implicit norms, rules, and expectations? Have you noticed co-workers engaging in a certain practice that you might have picked up along the way?
 - (b) How do you think these norms, rules, and expectations were established?
 - (c) Would you say these norms changed in hybrid meetings? Can you give an example of norm or practice that has changed or emerged in hybrid meetings?
 - (d) Do you face in any challenges with these changing norms? How so?
- (2) With the switch to hybrid meetings, have you noticed any change in how you usually prepare for meetings?

A.5 Concluding Questions and demographics

- (1) If you could choose between working hybrid, fully remote, or in-person, what would you choose? Why?
- (2) (Remind participants that these questions are also optional demographics questions:
 - (a) What is your age?
 - (b) What is your gender?
 - (c) What is your race?
 - (d) What is your occupation?