

Access Work in Disability Communities

A pre-enactment of repairing data intensive environments

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What if participants with bodily dispositions, such as deafness or blindness, took part in video conference sessions? In deaf and/or blind disability communities, data intensive digital environments are experienced as vulnerable and it has been argued, since the late 1990s onwards, that they cannot be treated as given, culturally inclusive spatial surroundings (Kitchin 2000; Goggin and Newell 2000). Spatial environments can be identified as a “dis/ability complex” (Goodley 2014) based upon experiences of power and violence in various disability communities and as situated social constellations under which both inclusive bodily abilities are negotiated and in which exclusionary mechanisms of disabling become reproduced. Research on disability communities and digital spaces during the Covid-19 pandemic (Yong et al. 2025) in particular has shown that digital solutions can be seen as a non-adequate factor to coping with isolation and loneliness. Digital participation by sensory and bodily means is limited because of the dominance of visuality and aurality that are encoded into technological devices, and because of the required touch-, movement-, and gesture-based competences in handling them. Even though universal design is an established field concerned with disability communities, these are not envisioned for plural sensory and bodily dispositions when it comes to digital devices and software environments (Hamraie 2017). To feel oneself as a “participant” (Kelty 2019) in a video conferencing environment, thus, always requires complex and resource-intensive media translations, infrastructural reconfigurations, and not mere promises of inclusivity. These circumstances become particularly pressing in disability communities because sensory and bodily participation is organized based upon a lack of resources and negotiations for corporeal standards in digital infrastructures that have not taken place in the context of diversifying access to society.

This chapter argues for the consideration of access work in digital disability communities; I wish to call for a cultural repair of the promises of inclusivity in digital spaces in order to argue for greater acknowledgment and visibility of this mandatory work and to inquire into *modi* of participation for a future common ground of action. In order to realize this speculative approach, I wish to utilize the method of pre-enactment, as an ethnographic way of knowledge production, in order to trace

a complex assemblage of the sensory and bodily participatory status of deaf and/or blind disability communities in digital spatial environments of video conferences in specific. In the first part of this chapter, I will engage with recent arguments stemming from crip technoscience about the urgencies to consider and make visible assemblages of access work in digital spaces. In the second part, I will revisit recent debates about the cultural repair of societies, based upon advocating for the loss of progressive forms of technological innovations and of privileges in knowledge making. I argue that reparative ways of learning from each other's sensory capacities can be established only where these losses are legitimized. Deaf and/or blind communities' access to spatial environments always requires care-intensive, low- or unpaid access work and engenders a mode of interacting by other sensory means than visibility and aurality alone. Considering access work as a cultural repair of the promises of inclusivity, inscribed into digital environments, envisions the potential to engage with different *modi* of digital participation. In the third part of this chapter, I will introduce the ethnographic method of pre-enactment and will outline empirical examples for more-inclusive ways of participation that were realized in the form of an online-research series entitled "Disability and the Digital." This event was organized by an international group of researchers, including myself, as well as scholars and activists from disability studies. This series was set up during lockdown during the Covid-19 pandemic and used the digital infrastructure of rapidly normalized video-conferencing tools and software; this created new spatialities for research and teaching ordinarily dominated by visibility and aurality. I will highlight how this series was analyzed ethnographically as a pre-enactment of accessing digital environments in a more-inclusive-way and through the exploration of a wider sensory understanding of modes of listening. Through this, I inquire into the sensory dimensions that are necessary in order to argue for a culture of repairing promises of inclusivity by reframing the normative inscriptions of listening into practices of cultural translation and synchronization, thereby undermining the time-efficient logics of digital spatial environments. I argue for the utilization of time, as a culturally rich resource of (non-)participation, and for the potentialities to consider "disability as a method" (Mills and Sanchez 2023) in order to ethnographically explore and sustain existing digital environments and to account for the reparative dimensions in digital environments.

"Crip times" and access work in digital spatial environments

Originally, "crip" refers to the disability rights movement and is used in these contexts as a self-empowering and queering vocabulary, rather than a discriminatory one (McRuer 2006). This interpretation dates back to the crip movement as it was founded in the aftermath of World War I in the 1920s. The term has since been used

and has been adapted during the last two decades by referring to current “crip times” (McRuer 2018). Crip times was formulated as a diagnosis of present times, which Robert McRuer argues is a current, transformative struggle with the heterogenization of societies. This struggle is centered around both the liberalizing, empowering effects of inclusionary visions, as they have been formulated and implemented since the UN-disability rights convention in 2009, and neoliberalist-motivated ableist cultures of hateful and discriminatory positionings of disability communities at the margins of societies. Social media in specific can be seen as both an emancipatory and a discriminatory and ableist realm for disability communities. Ableism is defined, as Fiona Campbell has argued, as a “network of beliefs, processes and practices that produces a particular kind of self and body (the corporeal standard) that is projected as the perfect, species-typical and therefore essential [...] human. Disability then, is cast as a diminished state of being human” (Campbell 2009, 44). An actualization of the crip movement is currently taking place within disability studies under these given circumstances. In 2019, Aimi Hamraie and Kelly Fritsch published the “Crip TechnoScience Manifesto” (Hamraie and Fritsch 2019), a work that made the programmatic case for emancipatory practices in disability communities, especially concerning the daily use of technologies. They convert the discriminatory status of bodily impairments into its empowering opposite, especially when it comes to the interactions with technologies, technological infrastructures, and techno-scientific ways of knowledge production:

“‘crip,’ [is] the non-compliant, anti-assimilationist position that disability is a desirable part of the world, and [...] the co-production of science, technology, and political life [...]. Crip theory centers disability as a locus of resistance [...] agitating against liberal assimilation and inclusion practices by marking disability as a desirably generative and creative relational practice” (Hamraie and Fritsch 2019, 2).

Resistance refers to the various promises of inclusion, especially in relation to digital infrastructures of spatial environments, and to technical solutions to inclusivity in the form of designed products, or ableist *modi* of verbalizing technical possibilities, which then call for affirmative realizations in disability communities. Liberal promises of these kinds have a powerful performative capacity, as Alexa Färber argues (2019), since they assemble various resources for commoning certain visions. The manifest character of the “CripTechnoScience Manifest” references Donna Haraway’s (1985) metaphorical and analytical figure of the “Cyborg” in order to highlight the self-empowering entanglement and emancipatory ways of knowledge productions between science, technology, and everyday cultures. The figure of the Crip resists ableist forms of knowledge production and refers to the emancipatory underminings of ableist standards in design through the refusal

of heteronormous ways of designing technologies for everyday uses. Ashley Shew speaks of “technoableism” (2020) which is inscribed into the affordances of a lot of technologies of daily uses, and within the programmed infrastructures and constellations in which digital technologies become relevant in daily routines in particular.

These ableist cultures in digital technology-related contexts refer to what Orit Halpern and Robert Mitchell define as the “smartness mandate” (2023). Halpern and Mitchell conceive of smartness as a collectively agreed upon and ideologically framed mandate in societies that allow the inscription of visions of time-based efficiency, functionalism, and self-optimizing logics into the development of high technologies and spatial infrastructures. Conceiving of smartness as a cultural inscription of mere functional optimization, into technological surroundings of any kind, clearly echoes ableist conceptions of both potential, sensory and bodily engagements and designed tech environments; they remain exclusively accessible for optimized bodies and, therefore, re-inscribe ableist visions, rather than inclusive ones. The call for “undoing optimization” (2021), as Alison Powell has argued, also refers to the consideration of lived experiences with technologies, such as smartness-related devices.

In the context of these developments, disability scholar Louise Hickman and Cynthia Bennett have highlighted how low-paid or often unpaid “access work” (Hickman and Bennett 2023) takes place as a routinized form of laboring abled-bodies modes of automatization. It is also apparent in caring about the needs and necessary capacities in disability communities that are required to take part in spatial environments, especially those referring to smart city related solutions. They refer to the complex forms of knowledge productions and time-specific resources necessary for creating access to built environments, data intensive environments, and even lived experiences based on their work with access data walks through urbanized environments. This can include, for instance, the documentation of the access work necessary for navigating the city with app-related devices or the mappings of how digital sensor devices or Artificial Intelligence/(AI-)related activities are experienced within disability communities in certain places. They make visible both how the undermining of so-called smart solutions take place and how the entanglement of specific sensory dispositions and technological devices in various disability communities put the lived experiences of certain spatial environments front and center.

Assemblages of repairing access in digital spatial environments

The need to collectively repair the promises of inclusivity in existing spatial environments has been discussed as an inquiry of healing cultural discriminations and

legitimate care-intensive work environments (Puig de la Bellacasa 2017). Healing, in the sense of cultural repairing, does not refer to a holistic approach, but to a relational inquiry of existing cultural programmings of spatialities. The urgency for the cultural repair work of spatial environments refers both to the acknowledgment of limited resources in democratic societies and to the acknowledgement of the heterogenization of society, which accompanies the loss of existing privileges over knowledge production and, for instance, the loss of progress-related technological forms of demanding ‘innovation only.’ The necessity to legitimate loss as a cultural category of repairing existing environments was also argued in terms of a resource-oriented approach necessary to inhabiting planetary futures (Elliot 2018). Loss has become a major cultural category for negotiations about cultural belongings under conditions of current ecological, economic, and cultural crises, given that the collective experience of loss provides the potential to form a common ground for more-inclusive action (Reckwitz 2024).

Thus, the cultural acknowledgment of losses is seen as an enabler of cultural reparations and a requirement for cultural repair work to take place. Cultural repair work is distinguished from a mere solutionist and problem fixing activity and has been described as a techno-solutionist fixing, and technical engineering, of current crises (Schubert 2024). A cultural perspective on repair pays particular attention to the loss of existing, accessible environments and accounts for the ways in which access to spatial environments needs to be organized for future modes of participation.

Repair is described here as a transformative practice in which *modi* of participation are being negotiated. This means that the production of knowledge that aims towards the heterogenization of society’s access is legitimated as a basis, and the care necessary for the repairing of various lacks of resources is appreciated. In the context of disability, the “cultural model” (Waldschmidt 2017) departs from the assumption that liberal forms of inclusivity are negotiated at the center of societies, not at their margins, and that these negotiations refer to historically specific norms and values. Thus, promises of inclusivity need to constantly face repair work because societal conditions are shaped and become transformed with time.

Wendy Brown has argued for “reparative democracy” (2024) and she positions listening as the major reparative practice, in the sense of finding emancipatory forms of learning from each other. In the context of deaf communities in particular, Brown’s idea of listening invites us to engage with widened forms of sensory interactions, and perceptual registers; it is, therefore, distinguished from a discriminatory and ableist meaning that refers to acoustic dimensions and hearing capacities exclusively. For Brown, listening in an overarching sense refers to empathic positionalities in given crises experienced by democratic societies. Listening encourages the consideration of cultural forms of knowledge productions that have been either marginalized or silenced. In the context of the climate crisis specifically,

listening is actively required for critical engagement with short-term ecological reparations in the Global South (Tironi 2023) and as a “reconsideration of history” (Táíwò 2022) that necessitates the inclusion of Indigenous and heterogenous forms of knowledge productions. Brown also positions listening as a major device for reparations of media democracies that accounts for the ways in which participation in digital environments in specific must be repaired in order to sustain democratic value makings.

Restorative practices or maintenance work usually engenders reproductive and reconditioning effects within existing environments and infrastructures (Denis, Pontille, and Brown 2025). Maintenance work is conceived of as routinized care-work that requires repair as a mode of reinstating things, infrastructures, or other breakdowns within spatial environments (Henke and Sims 2020; Strebel, Bovet, and Sormani 2022). However, cultural repair work, in this widened sense, is also productive for existing environments in terms of the negotiating factors about modes of participation. The ways in which cultural belongings are being negotiated performatively changes the *modi operandi* and the conditions under which these environments become repaired. Cultural repair work references the inquiry of certain imaginaries, envisionings, or promises attached to spatial environments. In the context of disability communities and the accessibility of digital environments, such as video conference settings, argument about learning from each other makes visible both complex access work and the liberal assimilations that are based upon promises of inclusivity.

This debate, thus, resonates with the existing ethnographic research into the assemblages of access urbanism and the ways in which the variety of sensory dispositions and bodily belongings in disability communities feed back into the necessary cultural repair of existing spatial environments that are entangled with digital spaces. Thomas Criado (2019) has argued for “technologies of friendship” and the ways in which various forms of mobility infrastructures in disability communities unpack the entangled ways of moving through urbanized environments that involve bodily and sensory forms of perception, smart technologies, and the city’s built hardware. The ethnographic details give insights into the sensory inquiries of existing built environments; they also give credit to the ways in which, for instance, breakdowns of the hardware infrastructures of the city, such as broken elevators, missing signs and signals, or unavailable assistive devices, lead to situated knowledge productions. This also applies to software-related aspects of what has been described by Sarah Pink et al. (2018) as “broken data,” when, for instance, broken technological infrastructures enable space for negotiations by both making visible and by undermining the existing ableist scripts provided by technological devices. At the same time, as Robert Stock (2022) has outlined, the precarious status of navigating the smart city in disability communities is evidence that the entangled assemblages of access usually lack economic and political resources. The digital sphere, and the

open-source-related devices and activism to live-monitor in particular, such as the functionalities of certain hardware of the city (such as elevators in train stations, for instance) becomes an important emancipatory spatial surrounding for community building. In terms of cultural repair work, engagements such as open-source live-monitors or other community-based digital practices outline the potentialities to provide spatial surroundings, which culturally value access work and aim to normalize complex, sensory knowledge about access. These examples ethnographically generate knowledge that further aims to speculate about the future of inclusive environments by cultural means of differentiation and logics that are quite remote from mere technocratic ones.

Real fictions of access: a pre-enactment

Scenario productions for these kinds of speculative experiments about future environments happen in economic (and often in start-up) contexts and are normalized as a routine of presenting technological innovations to publics, especially in smart city-related contexts. As Halpern and Mitchell have argued, they can be defined as performative “demo-ings” (Halpern and Mitchell 2023, 122) when referring to the marketing of prototypes, test-beds, and territorial zones of experimentation. This technological idea of demo-ing, the authors argue, is a regressive performative principle that often clearly undermined the theatrical framework of the Aristotelian *demos* by challenging the theatrical conditions of democratic value-making in public spaces. Prototypes, test-beds, and territorial zones of experiments have been criticized for their project-related factors and the strong technology-related force of “futures by speed” (Urry 2016) and technology-driven interests in smart city contexts that exclude a lot of expertise and participants by process. These kinds of spatial pre-enactments about futures, through digital innovations, are mostly related to epistemic closures in terms of knowledge production because their interest lies in technology-related factors of innovation-making.

A field of speculative knowledge production and “experimental zones” (Marguin, Rabe, and Schmidgall 2020) refers to epistemic openness and cultural innovation making, based upon “experimental collaboration” (Criado and Estalella 2018) with various actors from different sectors and fields in cultural studies and, specifically, at the intersection of ethnography, science, and technology studies and/or arts related contexts. The aim is to speculate about futures by formatting ethnographic objects through experimentation (Ballesterio 2021) in order to explore cultural values that refer to the democratic principles of future makings. This mode of speculation is directed at the “invention of the social” (Marres, Guggenheim, and Wilkie 2018) at the intersection of ethnography and science and technology studies and seeks ways

of cultural differentiations and the explorations of much-needed cultural belongings.

The major inspiration for these kinds of pre-enactments comes from performance theory and from theatre studies and it follows the principle of prefiguring collective experiences and encounterings in public spaces (Oberkrome and Straub 2019). The aim is to strengthen the demonstrative capacities of presenting technology-related innovations in public space with democratic means of knowledge production. In Vienna, the project “Real Fiktion Klimarechnungshof” was realized in order to pre-enact the foundation of a democratic institution; while this was promised, it has remained unrealized by Austrian politics (Färber 2022). The source of inspiration came from Hamburg-based performance artist and scholar Sibylle Peters, who developed the concept of “real fictions” in order to “call” for assemblages to come and which the performance collective *geheimagentur* has utilized in their performative practice since the 2000s. In Peters’ account:

“a real fiction is not about the few performing the many. It is about a few people who start to act *as if they were many*, to act *as if* the entities and practices, the wishes and necessities in question already existed, and thereby they might turn out to *be* many later on. [...] The performative ‘as if’ generates a space for playful experimentation, [...] even if a real fiction remains fiction and does not become very real” (Peters 2016, 37).

I connect this idea of bodily gathering in public space with the assemblage urbanism of access and with the bodily and sensory dispositions found in digital environments. Pre-enactment, in the ethnographic sense at least, also means staging and observing created scenarios as though they were real and as if they are in contact with the future. The ethnographic inquiry follows this scenario creation and deals with the enactment of anticipatory designs of what is to come (Pink et al. 2022; Cantanella, Hegel, and Marcus 2019). Through this inquiry, the approach mobilizes prefiguration’s performative capacities that allow us to both interrogate and to move back and forth between the endurance and cultural histories of the phenomenon, the present negotiations, and related future experiences of accessing specific spatialities.

Platform software, such as video conferencing tools, both regulate and control participants’ specific practices and online-interactions. Face-work and the ability to listen to spoken words and to read written chat communication is a normalized mandatory sensory requirement for video-conferencing tools. Anne Waldschmidt (2022) has argued that the face-work and the gestural coordination with the transmitted acoustic effects of spoken words and written chat-communication is related to the ways in which the normalization of bodily stigma takes place and does so by adopting a role theoretical approach to the theatrical qualities of bodily interaction in

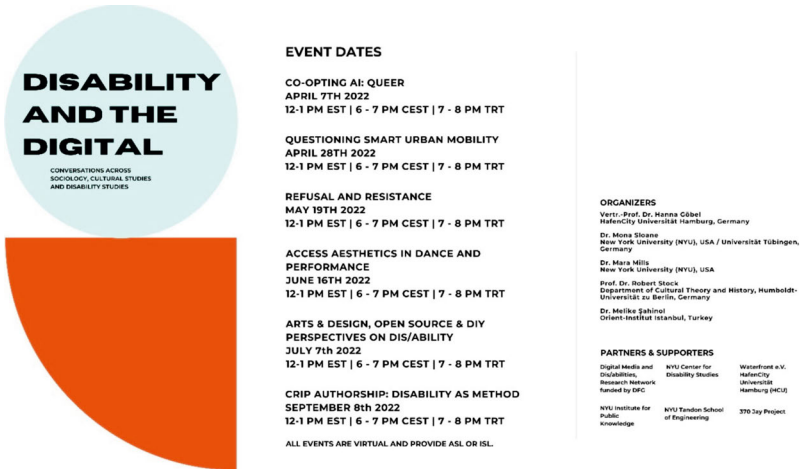
public life, in a manner inspired by Erving Goffman. The participants assembled in video conferences present themselves on displays, in quadratic window frames in either a sitting or standing position, where only half of the body is visible in both instances (which resembles the disciplinary mechanisms of professionals presenting themselves in media publics, for instance, such as sitting or standing moderators do on TV news). In the context of disability communities in video conference settings, sitting or standing over a certain amount of time depends upon the mobility of participants and, thus, the window frame often exceeds these disciplinary mechanisms. Moreover, the theatrical qualities of gestural work, in combination with listening and reading, occupy the center of an analysis that requires a multi-modal sensory engagement and a level of coordination that quickly exhausts participants, especially those on neuro-divergent spectrums. Deafness or blindness, for instance, also requires access work, which is based upon language-based, translational capacities in an audiovisual context. Thus, the focus lies on the dynamics of interactions in the scenarios created and it interrogates the cultural histories of programmed spatial environments, often taken for granted and as given, and how institutionalized sensory capacities and bodily affects change under conditions as the theatrical framings of the environment do.

The following ethnographic case study exemplifies approaches to diversifying ways of both listening and learning from each other in a video conference setting by testing the newly normalized digital environments established by COVID-19 lockdowns in an academic context. In 2022–2023, the Online-Lecture Series “Disability and the Digital” took place as a collaboration of international research partners Mara Mills, Robert Stock, Mona Sloane, and Melike Şahinol who all stem from Disability Studies, Media Studies, and Cultural Studies. It offered a series of six sessions about topics such as Co-Opting AI and Queer Studies, Questioning Smart Urban Mobilities, Refusal and Resistance, Access Aesthetics in Dance and Performance, Arts & Design, Open Source and DIY Perspectives on Dis/ability, and Crip Authorship: Disability as Method.

The methodical inquiry in the context of the accompanying seminar at HafenCity University was to engage with the *modi* of repair in a video conference setting ethnographically. This kind of scenario creation was part of the Bachelor study program “Culture – Digitalization – Metropolis,” with students engaged in urban research from a cultural studies point of view, who also supported the establishment of the sessions and who assisted with providing the digital infrastructure. The collaborators’ roles in this scenario setting were double-coded: we all acted as moderators and hosts for each of the sessions, both on a rotating basis and as participants. The role of hosting the session included the establishment of the digital infrastructure, including the financial support. Whereas institutionalized, standardized access work to the software was provided by the US American universities and partners, we had difficulties to find financial support in the German context, much like our partners

and participants from Turkish and Iranian educational institutions who also had very limited resources and support. Some of the participants in the audience also added major contributions to the debate about digital access to invited scholars and activists. In other words: we made the topic of inquiry itself a site of investigation.

Figure 1: Online-Lecture Series “Disability and the Digital” 2022–2023.



DISABILITY AND THE DIGITAL
CONVERSATIONS ACROSS SOCIOLOGY, CULTURAL STUDIES AND DISABILITY STUDIES

EVENT DATES

CO-OPTING AI: QUEER
APRIL 7TH 2022
12-1 PM EST | 6 - 7 PM CEST | 7 - 8 PM TRT

QUESTIONING SMART URBAN MOBILITY
APRIL 28TH 2022
12-1 PM EST | 6 - 7 PM CEST | 7 - 8 PM TRT

REFUSAL AND RESISTANCE
MAY 19TH 2022
12-1 PM EST | 6 - 7 PM CEST | 7 - 8 PM TRT

ACCESS AESTHETICS IN DANCE AND PERFORMANCE
JUNE 16TH 2022
12-1 PM EST | 6 - 7 PM CEST | 7 - 8 PM TRT

ARTS & DESIGN, OPEN SOURCE & DIY PERSPECTIVES ON DIS/ABILITY
JULY 7th 2022
12-1 PM EST | 6 - 7 PM CEST | 7 - 8 PM TRT

CRIP AUTHORSHIP: DISABILITY AS METHOD
SEPTEMBER 8th 2022
12-1 PM EST | 6 - 7 PM CEST | 7 - 8 PM TRT

ALL EVENTS ARE VIRTUAL AND PROVIDE ASL OR ISL.

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Repairing data intensive environments through synchronization and time-based resources

In this seminar, the students and I autoethnographically explored digital privileges, positionalities, and traced the complex entanglements between digital environment, medial translations, the participants' sensory dispositions, and the access work happening; this was realized at HafenCity University and the focus was on design ethnography relating to scenario creation. Through this, it became clear that listening to each other in this context needed to be situated in a technical environment of collectively organized cultural translations: among them were digital shorthand translation tools that turned the spoken word into written form in real time, automated live transcription tools, chat assistants (they would probably be AI-based today), and the support of two sign language translators who joined in two image tiles at a time and who translated speech into visual language, either in American Sign Language (ASL) or in International Sign Language (ISL). We recorded all sensory-based impulses of the participants, worked with the dis-

ability communities' autoethnographic protocols, and created situational mental mappings of technically-generated data streams and data flows.

I will summarize the major findings and experiences of the collective seminar work in what follows, since most of the empirical materials were students' learning outcomes and these were more related to collective reasoning and experimentation in the group.

In the context of real time translations from spoken word into written form, which is a common practice for streaming lectures in a lot of digital platforms, we noticed manifold misunderstandings and the need for interpretation and translation, especially in the English-speaking context (a language not native to everyone), and particularly relating to other translational processes, such as the sign language translators; if the transcript of the real time translation encountered grammatical mistakes, then the translational effects in the chains of communication were enormous for other participants. The automated live transcription tools installed in video conferencing environments usually complicate (potentially conflictual) dimensions, but can also make them the subject of ongoing negotiation. As Louise Hickman (2023) has shown, CART-related communication interferes in this manner by producing incomprehensible content in its automated forms. This also applies to the case of chat assistants, whether in-person individuals invited to the households and office spaces of the participants or in the form of chat technological assistances.

Two sign language translators, who joined in two image tiles at a time and who translated speech into visual language (one in ASL and one in ISL) supported our format, as mentioned previously. The integration of sign language translation was the most decisive part for the educational institutions involved from different nations and continents. Whereas this *modus* of inclusion was obligatory for US American partners and educational institutions, the financial situation was quite the opposite for the German partners and collaborators, including my own institutional environment. Funding institutions in the academic context only became aware of accessibility issues concerning the digital realm during the pandemic, especially for deaf and blind communities. For participants from Iran and Turkey, censor-based topics were also relevant for gaining access, and for inviting sign language translators.

In sum, language-based translations were experienced as a sensually excessive overload and involved a collective overburdening of content and information on various scales. In one observational protocol passage from a female, non-blind and non-deaf BA student, the student reflects on her own experiences of participating in the audience of one of the sessions. She writes:

"This time, the atmosphere was again very respectful, even though in many places I just didn't understand what was going on and simply lost track. There were often these long pauses after someone had either said something or written something in the chat. All the participants and the moderators then waited for the sign lan-

guage interpreters to translate. I found these pauses very long, but I didn't find them annoying. It was just so intense, all the communication was coordinated very slowly, but carefully. Sometimes things from the live transcript were translated incorrectly, which made some participants smile in the tile windows. It was exhausting for me at some point because this room was so different" (Student's Observational Protocol 15, 3).

It can be argued that the scenario analyzed pre-enacted that access work is obligatory in care-intensive work in order to envision inclusivity in a video conference environment. An experience like this involves critical engagements with the automatization of abled-bodies and the inscribed ableist practices of a video conference setting. Disrupting this programmed software's cultural norms and values, through the pauses and through the practices described by the student above, was often perceived as technical noising and as giving rise to social unproductivity. Here, referring to the undermining and questioning of ableistic-dominating dimensions of visibility and aurality also involves analyzing overburdening and exhaustion, based upon the inscribed norms and values of seeing, speaking, and reading, all of which become contested in the scenario enacted. Scaling up the programmed software's disciplinary mechanisms means assembling various sensory needs and exceeds the disciplinary mechanisms of controlling language-based data flows and communications. To envision inclusivity here involves repairing the translational capacities of turning language-based communications and practices, such as listening and reading, into gestural ones and *vice versa*. Literate readers of this scenario can then become participants who are able to cope with sensual overload and exhaustion. It requires cultural repair work to make this visible and negotiable. Moreover, reflecting on the privileges and positionalities of abled-bodies is mandatory to engage with these more-inclusive ways of listening to each other.

The synchronization of heterogenous forms of knowledge production also refer to specific "digital timescapes" (Kitchin 2023) that are at stake in this scenario. Access work is a time-consuming process, especially when it comes to matters of translational processes of language and gesture-based forms of communication that involve a large number of assisting knowledge and technological tools that create access points. This results in an interlocking synchronization of very different temporal processes. If we include the complex access work here, then a series of online conversations is structured differently than it would be in a time-optimizing logic, as we know it from video conferencing tools, and as this is a premise for smart-related technology providers, even in educational contexts. With this finding, I wish to connect to recent debates about "time as infrastructure" (Besedovsky et al. 2023), in which time itself becomes a cultural resource of spatial negotiation and for the creation of spatial environments. This applies here through the simultaneity of various overlapping and (potentially conflicting) temporal processes in order to make

a conversation happen; this can involve the blurry moments when waiting for comprehensions by face work or in translation-based responses, or even the time necessary for translational work to navigate misunderstandings and related situations or in terms of the assisted interference of ongoing translational work between participants, automated tools, and across the visual displays. We can both discover and describe these as moments of stand-by, as incomprehensible noise that belongs to digital environments like video-conference-settings. They are very time-consuming undertakings, but are necessary in order to establish a common understanding and to foster what it means to participate.

The collective findings also tell us something, both about the persistence of time and the continuities of speed and time-efficient modes of communication that our participants also faced. Our series was set up in capitalizing-time-formats for coordinating participants from different time-zones in a brown-bag lunch format or after-work format (depending on the time zone of participants) and that ran over one hour. In order to make that happen, the navigation of the sensual and comprehensive overload became a crucial factor for all involved. This insight was central for the result of this pre-enactment: this simultaneity of different accesses to the resource of time and the time-intensive synchronization work is necessary to repair this digital infrastructure. It is a collective experience, and is a common ground which needs to be enacted in order to repair this video conference and its liberal promises of inclusivity. Time becomes visible as an important cultural resource of synchronization and various temporal layers need to be coordinated, collectively practiced, and experienced by all members and by all moderators.

Care-intensive work, in relation to the timely synchronization of participants' ways of listening to each other, is part of what Powell's call for the undoings of optimization implies. In order to engage with modes of participation that aim at the reparation of the promises of inclusivity in digital environments, a break from time-efficient logics and mechanisms needs to be considered. Considering time as a culturally rich resource and as a requirement for negotiations allows for the creation of spatial environments in which a more-inclusive way of learning from each other finds common ground for action.

Concluding remarks: crip authorship in data intensive environments

I have argued for the critical consideration of sensory-based access work as an important experiential realm that contributes to the repair of the promises of inclusivity in digital environments, such as video conference settings, by departing from the Crip TechnoScience Manifesto and by considering recent debates about the urgencies relating to cultural repair and reparative potentialities. If participants allow themselves to delve into these time-intensive activities and negotiating processes,

then it will become apparent that time-intensive human work and a lot of translational resources are necessary to provide access to various sensory attachments in digital environments. The acknowledgement of this work and these resources is needed in order to repair promises of inclusivity in ableist automated environments for abled-bodies. Bodily dispositions provide the capacities to crip existing time-efficient logics in digital environments and to allow for plural forms of authorship in digital spaces. These plural forms allow us to discover time as a cultural resource of learning, in which it is possible to listen to each other; this is a cultural form of repair that emerges at the center of society, not at its margins.

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