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Beyond Zoom Fatigue

Ritual and Resilience in Remote Meetings

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COVID-19 has precipitated a massive social experiment – the sudden shift of millions of knowledge workers from their traditional offices to homes or other remote work locations. This has inspired heated debates and new ways of imagining the future of work. This paper hopes to contribute to a better understanding of these changes by reporting on the results of several dozen in-depth interviews with remote workers from a variety of geographies, industries and professions. We focus in particular on their experiences of remote meetings, with special attention to complaints workers have with their current implementation. As we learned, workers' complaints tended to be driven by social – rather than productivity or technical – concerns. We explore this social dimension in depth, propose a framework for thinking about meetings as rituals, and suggest how this emphasis might inform the design of technology to support remote collaboration.

INTRODUCTION

Among the many long-lasting impacts of the COVID-19 pandemic, the sudden mass adoption of social distancing created a situation that would have been unimaginable a few years ago. Millions of knowledge workers discovered they no longer need to travel into an office on a daily basis – or even at all. This sudden and massive shift in the "where" of work has already resulted in considerable experimentation and debate among firms, affected real-estate values and cities, inspired numerous new technology ideas, and even given rise to a named syndrome that, while perhaps not medically recognized, is immediately recognizable: "Zoom Fatigue". These changes pose serious questions with respect to both individual and organizational resilience: If this is the future of work, is it sustainable? What will its long-term effects be on workers and their firms?

We hope to contribute to a richer understanding of this phenomenon by providing an account of the aspirations and concerns of some of these workers themselves. This paper describes research on workers' experience of remote meetings via the mediation of PC technologies, smart phones, and videoconferencing software during COVID. As we will discuss, most research on remote meetings has focused on practical issues, what or emphasizing productivity. while leaving relatively unexplored the fact that meetings are also social events, sometimes intensely so. Our research suggests that, for workers, the social dimension of meetings is actually the more consequential consideration. The introduction and continued use of technology may pose greater challenges to our social resilience than to productivity.

Our research approach

In the spring of 2020, shortly after most of the world adopted strict pandemic response measures, we began a process of interviewing individuals from a wide diversity of professions, industries and geographies, to understand their experience transitioning to remote work. Notably, these interviews were all conducted remotely, as was all of our team's

collaboration on this project. This presented us with an opportunity for auto-ethnography that also helped inform this work.

Our research involved three distinct phases, which provided us with a progressively richer understanding of remote collaboration. In Phase I, we conducted roughly three dozen interviews, during which we documented a wide variety of stories about diverse, often creative uses of remote collaboration technologies. Some were decidedly not about work – a baby shower featuring pre-arranged delivery of gifts and goodies, a large and raucous family gathering that joined multiple households on two continents, or "game nights" involving the clever use of multiple game boards. Nonetheless the majority of events participants described for us were business meetings.[2] As a way of coping with the pandemic and enforced social distancing, most of our participants had positive things to say about technology use, reflecting what appears to be a surprising consensus: remote work actually works! (Barrero et al, 2021; Parker et al, 2022) This is not to say it's without its challenges. Newer employees lacking organizational network ties struggle with career advancement (Barrero et al, 2021); many workers – but especially mothers – report longer work hours and corroding work-life boundaries. This includes a sense of being overwhelmed by meetings (ibid). Many of these challenges, not surprisingly, implicate technology and point to opportunities for improvement. Over the course of our Phase I interviews we thus paid special attention to technology-related complaints, ultimately compiling these into a list of roughly 75 items that we organized in terms of audio, visual or general technical issues.

We made use of this list in Phase II of our research. These interviews, conducted in the Fall of 2020, focused explicitly on discussions of remote work-related meetings, using a retrospective approach. First, we asked participants (n=24) to provide us with a catalogue of their recent meetings. Then we asked them to comment on whether they'd experienced any of our list of technology breakdowns in these meetings. We also asked them to comment on how serious any given breakdown was, using a five point scale, with a score of 1 representing no serious consequences, while a score of 5 is the most serious. The result of this exercise was a matrix containing thousands of cells, documenting the seriousness of our breakdowns across dozens of meetings. This scoring method helped us recognize patterns in the ways different technology breakdowns have on different types of meetings. Just as importantly, it provided us with an occasion for gathering stories about what made some breakdowns "serious." These stories, it turns out, drove the primary insights of this paper.

Before turning to that discussion, we provide a brief description of Phase III to round out this introduction to research methods. After Phase II we engaged in a series of structured brainstorm sessions with members of our larger organization – primarily engineers involved in machine learning algorithms research. These brainstorms resulted in a set of application or usage concepts, which became the focus of Phase III interviews, wherein we tested these concepts with research participants (n=17) to have them rate and comment. Analogously to our Phase II interviews, the feedback ratings we received from participants were useful, but far more valuable were the associated discussions, which helped us understand participants' attitudes regarding the potential for AI in facilitating remote meetings.

MEETINGS AS RITUALS

The breakdowns we documented and discussed in Phases I and II of our research point to a seemingly straightforward, foundational insight about meetings: in addition to their more explicit practical or instrumental purpose, meetings also have a social dimension,

which plays a significant role in how attendees experience them. This was clear in our Phase II problem-ranking data. In a majority of cases where participants ranked problems as either "serious" or "very serious", their reasons involved a negative *social* outcome. Negative social outcomes were sometimes described at a personal level, for instance perceived damage to one's professional reputation or identity, or potential damage to one's relationship with colleagues. In other cases, negative social outcomes were described at more of a group level – for instance, loss of cohesion or a general sense of awkwardness among teams. In both cases, we distinguished such outcomes from what might be considered "practical" outcomes, including lost productivity, a disrupted meeting agenda, or other outcomes associated with work productivity.

The prevalence of the social dimension came as a mild surprise; there is little in the technological literature on remote meetings that would seem to predict this. The field of Computer Supported Cooperative Work (CSCW), for instance, has focused squarely on remote collaboration for decades, with an enduring attention on making meetings more effective (Yankelovich et al, 2004) by focusing on such practical concerns as meeting preparation (e.g., Bicharra Garcia, et al, 2004), facilitation (Hughes and Roy, 2004), note-taking (Exposito et al, 2017), information summarization (Shang, et al, 2018), or information visualization [Shi et al, 2017]. Indeed, despite the fact that the CSCW community has explicitly embraced the use of ethnographic methods (Schmidt and Bannon, 2013), there has been an equally explicit tendency to focus ethnographic methods on how people "get things done" (Blomberg and Karasti, 2013; Randall et al, 2021). This is especially true of ethnomethodologically inspired ethnographies, which have achieved relative prominence in CSCW, and which focus on practical accomplishments as a kind of remedy to older social scientific studies of work that "actually miss out *how* it is done: they miss the 'doing', of work, how work activities are achieved in the actions and interactions of those doing the work" [Button, 2012: 678].

Thus, despite much attention in CSCW to the social production of work in the context of meetings, there is little regard for the work of social production. Indeed, as (Niemantsverdriet and Erickson, 2017) lament, technology-focused research "…seems driven by a view of meetings as an uncomplicated venue where people simply work together to pursue collective goals like solving problems, designing artifacts, and making decisions." To counter this, and understand the anxieties that technologies can produce, we propose a perspective that views meetings as *rituals*. We use the term intentionally and carefully, aware of both the deep history of research on ritual in anthropology, and the many pitfalls such work has presented: an overemphasis on the distinction between instrumental and symbolic action; the bracketing of rituals as entirely distinct from other human endeavors – or conversely, the suggestion that all human behavior is infused with ritualism. By calling out the ritual dimension of meetings we hope to draw attention to two aspects:

First, as many anthropologists have noted, rituals are sites for the (re)production of social order. Within the tradition of symbolic anthropology, Turner (1969) rescued the concept of ritual from its association with vestigial cultural conservatism to show its functioning in broader social and cultural processes. Geertz (1973:96) famously notes that rituals provide both "models of" and "models for" the functioning of a natural order, to produce an alignment between beliefs and dispositions. Bell (1992:85) describes this process as "redemptive hegemony." "To maintain and adapt their assumptions about the order of reality persons and groups engage in degrees of self-censorship or misrecognition, as well as legitimation and objectification in the guise of more stable social structures."

Not surprisingly we find an abundance of rituals in modern corporations, whose reliance on the careful alignment of functional constituents and components is perhaps unsurpassed

among all forms of social organization, and whose embrace of the notion of "culture" has been absolute. "Culture has been the fertile soil that has enabled both their purpose and their strategy to come to life and drive extraordinary performance at scale." (Joly, 2022). Onboarding events, mandatory trainings, and performance reviews are a few obvious examples that come to mind, but so are meetings. While they may seem to represent the epitome of mundanity, or even drudgery, meetings are sites where the (re)production of corporate culture and social ordering is enacted, and occasionally challenged. A few anthropologists of meetings working outside the technology industry have demonstrated this understanding. Schwarzman (1989), among the first and most extensive anthropological treatments of meetings, emphasizes the extent to which they "generate the appearance that reason and logical processes are guiding discussions and decisions, whereas they facilitate …relationship negotiations, struggle, and commentary" (1989:24). Sandler and Thedvall (2017:15) similarly point out that meetings are "*makers*, making willing revolutionaries and endlessly improvement-oriented workers and rule-internalizing bureaucrats."

A second aspect of our interest in meetings-as-rituals is the way in which they both manage and produce risk. At a fundamental level, commitment to any form of joint action may include risks, as Jones et al (2015) point out and demonstrate in the context of team formation meetings at hackathon events, which are self-consciously styled to mimic the world of tech startups, "an economy of fast-paced, free-market, high-concept innovation cycles presupposes a mobile, flexible, technically adroit, and calculatingly self-interested workforce—who, for all their potential gains, may still pay a high human toll." (341). The hackathon setting, though "artificial" in some respects, nonetheless casts high relief on both risks of commitment to joint action (exploitation, loss of autonomy, or entanglement in problematic endeavors) and how those risks are managed through complex displays of interest, hesitancy, reassurance or commitment.

We may not all attend hackathons or work for technology startups, but meetings can still feel risky and produce anxieties, as anyone who has felt the pressure of a client pitch, a challenging internal deliberation, or a gaffe in front of a large group of unfamiliar colleagues knows all too well. This anxiety is partly a result of the fact that meetings, like other rituals, are settings where attention to *performance* itself is heightened. A number of studies, mostly by ethnographers of communication (e.g., Hyme, 1964; Baurman, 1975; Irvine, 1979), have documented how communicative practice marks a setting as "special", thus calling sharper attention to itself. Bell (1992) calls this process "ritualization": "a way of acting that specifically establishes a privileged contrast, differentiating itself as more important or more powerful," than similar actions in other more mundane settings. Heightening attention to performance and imbuing the event with power raises the social stakes. Meetings are where workers explicitly perform hierarchy, transparency and trust, relationships to colleagues, and perhaps most fundamentally their identities as *professionals* "…capable of 'making themselves,' a proposition that remains cherished across the liberal political spectrum today" (Boyer, 2013: 406). This is true not just for the most obvious speeches or presentations, but on all kinds of actions. The performance or signaling of attention, as we discuss below, may be as consequential and fraught as the performance of a speech.

A number of resources are mobilized in service of ritualization, including the choice of setting, the inclusion or exclusion of particular participants, the arrangement of bodies, the allocation of turns at talk and, of course, the use of language and nonverbal communication, take on significance to the extent that they both call attention to themselves and imbue the event with greater power. Remote meeting technologies may interact with these other resources in complex ways, for instance by introducing unfamiliarity, instability, or shaping

the types of verbal or nonverbal behaviors that are available to attendees. Fair or not, a worker's performance and status within an organization may hinge on the functioning of a technology that is out of one's control. As Saatçi *et al* (2020), demonstrate, even a momentary loss of network connectivity can result in a remote employee being first teased, then admonished, and finally excluded from an interaction, despite an ostensive organizational interest in inclusiveness. Our own participants were clearly aware of such risks as they rated and then discussed the relative seriousness of various technology issues. The most highly-rated (*i.e.,* most serious) technology problem on our list, for instance, was inexplicable silence, primarily because of the anxiety it produces:

> "I'm giving a presentation and all of a sudden I can't tell if anybody is even listening. It's the most horrible feeling. Have I lost them? Are they upset? Is the network down?" (P2-7)

Even when functioning as designed, technologies can introduce social risks. Our participants' stories included instantly recognizable episodes such as embarrassment over home environments caught in the video background, or audio inadvertently shared because someone forgot to mute their microphone:

> "My background is pretty good – it has a nice painting in it, so I like to leave it on. But you can also see part of my kitchen in the corner, and sometimes my son walks through with his shirt off after he gets out of the shower. He's seventeen so it looks like I've got a half-naked man walking around behind me. It's disturbing." (P2-10)

> "My biggest fear is people hearing me eating while I'm on a call…" (P1-24)

These stories are instantly relatable and funny to many of us, and yet they also show how carefully we must manage our professional identities in the era of digital liberalism. Bookshelves in the background are acceptable, messy kitchens are not – or more correctly, messy kitchens may not be acceptable for certain types of meetings, involving certain types of participants. This contextually dependent sense of propriety is partly what draws our attention to the ritualistic aspect of meetings, not unlike different norms for self-presentation for going to a picnic versus going to church.

Oversharing, as mentioned, can affect more than individual identities – it can harm relationships, as some of our participants recognized. Unfamiliarity with technology, or carelessness in the use of it, can have devastating consequences for professional relationships:

> "Once I was in a meeting and someone IM'ed a nasty comment about the speaker to the person who happened to be sharing their screen [with all meeting participants] at the time. It was awful. You have to be super careful about stuff like that." (P2-1)

While malfunctions and oversharing provide dramatic examples, many recognized more subtle social effects of technological mediation. Even in more mundane, internal meetings, the use of videoconferencing could degrade one's experience of meetings, particularly for individuals who may already feel somewhat disadvantaged.

> The thing we are missing is having a social and emotional connection with colleagues, since the remote meetings started. People don't put their cameras on, so

> we can't see them. It becomes slightly tough to make connections. When I don't have that connection it makes it harder for me to speak confidently, especially in the larger review meetings (P2-6)

> In our weekly staff meeting, it's much more subdued than it used to be. People wait for longer – they have their microphones muted. It creates a delay so people aren't jumping over each other. People wait – they don't add much. It's a particular dynamic with the participants. It's an energy change I've noticed. People are not only dealing with a whole change to their teaching strategies and teaching world. There's an uncertainty that they're doing it right. People are a little more timid, so they don't interject. It's a different dynamic (P2-2)

Here the interaction of technology and ritualization can be seen through the lens of a negative example. Hesitancy and timidity due to unfamiliarity with colleagues can be further exacerbated by awkwardness created by latency between speaker turns that comes from the need to unmute microphones, leading to a downward spiral of participation. Not only is the social dimension of the meeting undermined, but its productivity as well.

The factors contributing to risk in meetings

As part of our analytic process in Phase II, we extracted from our research participants' stories those factors that seemed most salient and productive as resources for ritualization, particularly those that seemed associated with increasing attendees' sense of risk.

Table 1: list of factors affecting individuals' assessment of social risk in meetings

Cluster	Factors
General Meeting Characteristics	• Meeting type or purpose • Formality of the setting • Number of participants • Social status of participants
Meeting moment	• Mode of interaction / speech event (presentation, sales pitch, info sharing, decision-making, assessment, collaboration, camaraderie) • Centrality of focus • Turn-taking norms • Code structuring practices
Individual's place in the meeting and moment	• Role in the meeting • Familiarity with and relationship to other attendees • Perceived expectations of others w/r/t participation, sharing information or artifacts, etc.

Table 1 provides a rough summary of this analysis, along with a provisional organizational framework. One set of factors, which we termed "general meeting characteristics" are perhaps most salient, and certainly most commonly referenced in stories from our interviews. These include the number of participants in a meeting, the ostensible purpose of a meeting, or the level of hierarchical difference among attendees. Meetings involving large numbers of people, meetings with customers or superiors, or people with whom one is less familiar, are all considered higher risk.

> "Our most important meetings are the client review meetings, and the business development meetings… These are where we focus on the relationship with the client." (P2-15)

Technology breakdowns in meetings involving either superiors or clients were considered most consequential. Some participants explicitly noted that the same breakdown may have completely different social consequences depending on who is in attendance:

> "If that happens in a stakeholder meeting it's catastrophic. If it happens during staff we just laugh about it." (P2-12)

"Meeting moments"

Despite the salience of relatively static features of context such as meeting type or status of attendees, a significant number of our participants pointed out that breakdowns are more consequential at certain *moments* within a customer meeting.

> "Like when you're right in the middle of an important exchange with a customer, and you drop, it just totally kills what you're trying to do. You miss some key clues to what they're saying. That [rapport] is hard to get, and then…it's just lost." (P2-14).

Though none of our participants ever used the phrase "meeting moments" (as we came to call them), the idea surfaced in many of our interviews, and not simply because of technology breakdowns. Many of our participants, reflecting an intuitive understanding of ritualization, recognized that meeting moments are created through practice, for instance, by shifting the social framing of a meeting from the business at hand to something more focused on camaraderie.

> "We usually end our meetings with a few minutes of loose chat, the water cooler chat that we no longer have. We've tried to integrate that into the [remote] standup." (P2-4)

They also note that technologies can introduce risks is by undermining such practices. Multiple participants described to us how they were once able to seamlessly accomplish such shifts in meeting moments, and how they have struggled to do so since COVID:

> "When you're at the office, you have all kinds of opportunities for chit-chat…We don't get that anymore. Our manager has a time set aside for personal updates at the end of every weekly staff meeting but mostly it's just painful." (P2-13)

P2-13 explained that such moments felt more like *"an interrogation…Everyone has to take turns telling the manager what they did over the weekend."* This points first of all to the fact that "informality" is as much a reflexive accomplishment as "formality" (cf., Irvine, 1979). It also points to how technology may itself shape the kinds of resources that groups can use to fluidly create different modes of interaction on the fly. In this case, by enforcing what Goffman (1966) called a "central situational focus" for all participants, along with distinct structuring of turns at talk, remote meeting technologies undermine "chit chat" and turn it into a more formal and moderated interaction. This reshaped interaction increased a sense of awkwardness and social risk, making it "painful."

APPLYING OUR ANALYTIC FRAMEWORK: TWO EXAMPLES

In this section, we look at the process of ritualization more closely, with a particular focus on how the mediation of technology in remote or hybrid meetings may support or interfere with individuals' attempts to establish the power of an event or produce social outcomes through communicative practice. We focus specifically on a question of "visibility", to show how different meeting circumstances can drive widely divergent technological needs and experiences.

Example 1: technology, visibility, and the performance of trust

Some meetings or moments are notable for the extent to which both communicative performance and the very structuring of the work within the meeting are explicitly focused on producing a social outcome. Such a situation was described to us by one of our research participants (P2-8) whom we will call Tabitha for the sake of narrative.[3] Tabitha is the deputy director of labor relations for a mid-sized municipality. Her job is to negotiate contracts with the city's labor force. COVID created two acute problems for Tabitha. First, it dramatically reduced the city's operating budget. The city urgently needed to find ways of saving money, so Tabitha was tasked with meeting representatives of the city's various employee organizations (which she refers to as "bargaining units") to collaboratively find ways of saving money through concessions in salaries or benefits. Tabitha's second challenge was how she had to do this negotiation: in online meetings, a tool she hadn't used for this purpose prior to the pandemic. It is important to note that Tabitha's objective in these meetings was not simply to find ways to save the city money, but to preserve the relationship of trust and good faith she had built up with the city's employees over many years. She now had to do this using a new medium. Perhaps not surprisingly, she described the current negotiation process as "very challenging."

A key element of Tabitha's performance in negotiation meetings is the sharing of financial spreadsheets. Sharing of digital documents is obviously a common part of many meetings, providing both a resource for structuring activities and facilitating collaboration. For Tabitha, sharing spreadsheets was not just about conveying information, but also to facilitate the creation of trust, by demonstrating transparency and accountability, and providing her negotiating counterparts with the opportunity to actively interrogate different financial scenarios.

> We just share the financial information…show them our numbers. This has always been done in person. We came up with different numbers for the different bargaining units, and showed them – we need to save two percent. If you don't want to take it out of salary, we gave them this spreadsheet and they could plug in numbers so they could go play with it. We didn't want to dictate to them how to get to that. (P2-8)

Negotiation meetings, which typically include anywhere from four to eleven participants, had transitioned to Zoom during the pandemic. Prior to the pandemic, Tabitha would have conducted these meetings face-to-face:

> I've been doing this a long time. People have a tell – the way they ask a question helps us understand what they're thinking. It's really about being honest and transparent. That's why we put that out there. Really just being able to understand

> what's that question about and being able to answer it clearly for the other side. (P2-8)

Tabitha's performance of good faith negotiation depended not only a shared workspace that can be jointly interrogated, it also depended on her own ability to clearly see her counterparts and their reactions to different contingencies. The use of online meeting technologies precluded this. For Tabitha, this presented a major difficulty.

> I want to see people – I want to be able to read them. If we all met in a room we'd just be having a conversation. We're talking about this – this is what we're doing. Especially when they have questions – they might ask questions about their bargaining unit, why we are asking for this (P2-8)

Available technologies provide Tabitha with an adequate resource for performing transparency, but fail to provide her with the ability to see her interlocutors and their responses to her. This was most acute in the moment of joint decision-making, when agreement on cuts would result in both short term gains for the city and a long-term sustaining of the city's relationship with its workers. It was striking in Tabitha's story how inseparable these two outcomes were, and how much they were affected by technology.

Example 2: technology, invisibility and the performance of engagement

Tabitha's example demonstrates the desire for and utility of mutual visibility. This allows rich signaling and inferencing that helps interlocutors build a common sense of purpose and trust. In other cases, such rich visibility was clearly undesirable, at least to some meeting participants. This came up in the stories of many of our participants, but nicely articulated by one in particular, (P2-3) whom we will call Tom. As with many of our participants, Tom noted that in large, routine and formally structured meetings, such as his weekly update meeting, it is useful to be invisible:

> "It's probably about 70 or 80 people. I speak in this one as little as possible. It's not interactive. The CFO has his video on. It's put the meeting on, and listen, but have coffee. …Our video culture is essentially have as little video as possible... You don't want to have video on, nobody wants to have video on." (P2-3)

Such meetings are noteworthy for their asymmetry with respect to the way one's role in a meeting shapes one's desire for visibility. Speakers, as earlier quotes in this paper have attested, naturally desire audience feedback. But, in the case of larger, routine, formal meetings, audience members often prefer to go undetected. They mute their microphones and disable their cameras. This is not only to avoid potentially embarrassing over-sharing, as described above. Many of our participants said they remained invisible so they could multitask. They described overwhelming demands of both work and home life as primary drivers of multitasking behavior – along with a sense that their time spent in low-engagement meetings could be better spent on other activities. This tendency is clearly echoed in other research (Cao, et al, 2021). While people may multitask in response to pressures associated with productivity, the desire for invisibility while doing so has more to do with meetings as rituals. Well before COVID, Wasson (2006:114) recognized that "the pervasiveness of multitasking in virtual meetings thus requires us to reconsider the Goffmanian definition of meetings as involving a central situational focus."

Wasson's insight highlights that multitasking is ritual transgression. It needs to be done discretely and without disrupting that central situational focus, using indicators such as a mute icon or obviously inactive camera – what Goffman(1966) has called "interaction shields." The behavioral norm for remote meetings is still one of central situational focus.

> "I am a huge proponent of video conferencing etiquette. If we are on the phone, spending everybody's time, we need to be engaged and give the respect that's due and ensure that we are paying attention, that we are there." (P2-16)

This was explicitly stated by only a few of our participants, but clearly the practice was ubiquitous as described for us by others. A common anxiety among those who engage in shielding is being caught in their inattention: "… there have been times when I hear my name and I have to say 'sorry, can you repeat that?'" (P2-20). Yet, despite that anxiety, it is better to be caught out this way than to be obviously inattentive.

There are yet other reasons for remaining invisible. Activating one's audio and video in a larger meeting may be interpreted as an inappropriate attempt to perform hierarchy. As many participants told us, managers and leaders more often activate their video than those who report to them.

> "Anyone with a leadership position will keep their cameras on. They are used to being in the spotlight and the center of attention." (P2-4).

Managers themselves suggested they do so to demonstrate their heightened interest or engagement:

> "I turn on video on so people can see me – I think it helps with feeling connected." (P2-10).

Activating audio or video among those not in a leadership position might thus be perceived as pretentiousness – roughly akin to claiming a seat at the head of the table. As Tom describes it, people should remain invisible in meetings…

> …unless you are trying to suck up… if you want to impress the boss, you're there, you're in a tie for some reason, you're looking very sharp, you want to impress the boss 'oh very good point sir.' That's the kind of person." (P2-3)

Even this did not entirely explain people's reluctance to activate audio and video, however. Some participants noted that being on camera ultimately requires a performance of engagement (e.g., by constantly looking attentively at their screen) that feels both inauthentic and unsustainable. As one subject put it: "I just feel too exposed with video on, especially in larger meetings." (P2-7). Sustaining this kind of performance across many meetings per day or week can be exhausting. Surprisingly, this insight has received little attention in the extensive recent discussions of "Zoom fatigue" (Lee, 2020; Bailenson, 2021; Wiederhold, 2020). Giving employees the option to disable the camera amounts to giving them a modicum of agency in the face of what may amount to overwhelming demands to continuously perform alignment and engagement.

That simple insight lies at the heart of our connection of meetings, rituals and resilience and provides a simple but useful way of thinking about technological design: by focusing on the work associated with the many, diverse modes of socially consequential performance in

meetings, perhaps we can create technologies that make meeting participation both more sustainable and rewarding. This demands both appreciating the types of social risks that workers face, the complications that technologies introduce, and the possibilities that we might imagine. In the section that follows, we build on the examples of Tom and Tabitha, discuss possible solutions that emerged in group ideation sessions, and explore how feedback to the resulting concepts deepened both our understanding of how to manage the social riskiness of meetings and potentially improve resiliency.

DESIGNING FOR SOCIAL AGENCY

As mentioned above, our research in Phases I and II provided inspiration for technology concepts that we then tested in Phase III of our research. Both of the concepts we introduce in this section feature artificial intelligence – specifically, machine learning technologies, reflecting the research focus of colleagues in the lab where we work. Despite the specificity of our focus, this phase of work was helpful in clarifying an important design insight that we believe applies beyond artificial intelligence: optimizing for what we call "social agency."

We begin with a technology inspired by Tom's example – the asymmetrical desire for visibility of audience in large meetings. Our extended team proposed to solve this problem by providing an intermediate layer between speakers and audiences. Instead of requiring individuals to share their audio and video feeds directly with colleagues, we proposed that they share such feeds only with an intelligent agent that could detect feedback signals (head nods, expressions of puzzlement, hand raises, or other routine expressions), anonymize and aggregate them, and report them to speakers as a stylized form of feedback that can be easily interpreted. This intervention, we thought, might be less invasive than being constantly on camera, yet less effort than manually using the "emoji" buttons [cf. 1] that became more common in meeting apps during COVID.

Similar ideas have been proposed elsewhere. Murali, et al (2021), for instance, describe such a system, which the authors developed into a functioning prototype and tested with users, reporting favorable reviews. We note, however, that such reviews come only from those acting as speakers or presenters in meetings, not from those audience members whose feedback was gathered. We believe this is a significant gap. Our own tests involved assessments from participants (n=17) presented with concept storyboards in two separate studies. One of those studies is documented in (Aslan et al, 2022). In both we found a clear asymmetry in the desirability of this idea, unsurprisingly matching the asymmetry in roles and performances associated with speakers versus those for their audience. While speakers/presenters may see the value in receiving feedback, people commenting form the point of view of audience members unanimously rejected it. Here is a sampling of feedback.

> "Engagement feedback feels like big brother is watching—not a fan at all." (P3-15)

> "It seems creepy. If I could have full control over it, I might be fine, but then it is extra work." (P3-13)

> "I would be worried about accuracy of my feedback. I am also concerned about privacy of data." (P3-14)

> "I personally do not like it because I multitask during meetings. My reactions could be towards something else. I have concerns around privacy and security as well." (P3-17)

In these comments we see two closely interconnected critiques. First, notions of "creepiness" and privacy were part of every critique, suggesting a discomfort with having an intelligent agent monitoring one's reactions. Superficially, there are obvious hints at discomfort with surveillance, including potential loss of control over who gets to view one's reactions. At a deeper level, the "creepy" reaction is the tacit recognition of what we have explicitly noted above – that even the signaling of feedback is a form of performance. One subject was explicit in this recognition:

> "I'd always have to have the camera on so the system will see the gestures I am doing – kind of performing on the camera, which could be distracting or silly."(P3-16)

This recognition of feedback signaling as a form of social performance stands in contrast to a view, underlying much work in deep learning, that human emotional expression is an objectively verifiable "detection" problem (cf. Goodfellow et al, 2015; Kunstler et al, 2021). The most immediate objection is the assumption that there would inevitably be inaccuracies, and these would result in extra work of monitoring the agent and correcting its output. As a consequence, the majority thus preferred the more direct manual labor of selecting their own expression from "emoticon" buttons. At heart, here, is a matter of social agency.

> "Autonomy and agency are ... top concern[s], so I would be more interested in manual… it feels invasive otherwise. It starts to feel unethical if you don't have someone's explicit consent to see reactions versus the active consent of clicking a button" (P3-5)

Participants maintained this insistence on social agency even in hypothetical situations where their feedback cues might be anonymized and aggregated. As one put it: "I have a fundamental mistrust of the ability of the system to understand nuance." Social signaling, particularly in the ritually charged context of a meeting, is a job for humans. As Goodwin (2000: 1491), explains: The production of social action is "a contingent achievement of relevant intersubjectivity," which "requires that not only the party producing an action, but also that others present, such as its addressee, be able to systematically recognize the shape and character of what is occurring."

It's not merely a matter that human interpretation, with its richer sense of context, is likely to be superior than machine intelligence at making a situationally correct interpretation. Human interpretation is also essential for participants to create a shared basis for subsequent social actions:

> Without this it would be impossible for separate parties to recognize in common not only what is happening at the moment, but more crucially, what range of events are being projected as relevant nexts, such that an addressee can build not just another independent action, but instead a relevant coordinated next move to what someone else has just done (Goodwin, 2000:1496).

Ambiguity and interpretive flexibility invite further action and engagement, whether that is affirmation, repair or other means of both ensuring the robustness of the interaction and a shared sense of meaning. We undermine this process when we introduce technology into the middle of it in a way that replaces such human agency with a set of pre-trained models.

Suchman (1993) anticipates the current argument in a much older study, and recognizes in such efforts the attempt to reduce the messiness of real-world social action to something more "disciplined" and governable. We argue that our participants' rejection of an automated feedback detector reflects this understanding, and testifies to the importance they place on retaining their own agency in the midst of ongoing social production.

Designing for social agency means providing meeting-goers with the tools to optimize their ability to engage in this messy, contingent achievement of intersubjectivity, in ways that suit both the situation and their own sense of personal or relational risk. Sometimes, when risks seem high or the benefits of engagement seem low, attendees should have the option of being both present and invisible, with simple tools for their own intentional expression.

Increasing social agency by enhancing embodied presence

This is not to say that AI has no place in meetings, or even in supporting the kinds of verbal and non-verbal performance that meetings entail. Rather, designing for social agency demands a more careful understanding of the type of problems that AI technologies might solve in the context of meetings, as well as the types of situations where such solutions might best apply. For a very different take on social agency, we turn to issues raised in Tabitha's example. As noted, Tabitha's performance of transparency and trust depended on shared access to given artifacts (spreadsheets) along with the desire for mutual visibility of participants, a situation much different than Tom's. While shared applications are common in remote meetings, rich mutual visibility is less so, particularly when shared applications are in use.

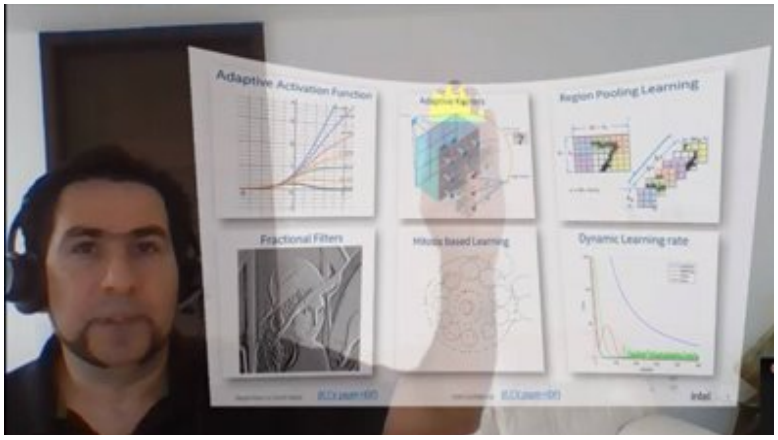

Figure 1: Mixed reality collaboration prototype showing a user superimposed with a shared application, using machine learning technology to provide body positioning and gestural controls

Figure 1 offers a visual introduction to a step our organization has taken in that direction – a prototype that features mixed reality combination of both participants and shared workspaces in a meeting.[4] As the image hopefully suggests, this technology superimposes in one scene both a meeting participant and a shared digital work surface, thus enabling a collaborator to see both the colleague and their actions in a shared workspace. Through the use of body positioning, gaze, indexical gestures, or even specific actions in the work space, colleagues can both detect and direct each other's attention, make their intentions clear, or better coordinate joint action, what Goodwin (2000) calls "embodied participation frameworks." A key first step in this regard may be the deceptively simple step

of providing remote meeting attendees some analogy to the positioning of bodies in physical space, a capability we are undertaking both in the visual and auditory channels that, so far, seems quite promising. Though we are unable to go into detail in this paper, simply providing spatialized audio may enhance the creation of meeting "informality" by permitting more overlapping speech, a familiar feature in face to face interactions (Schegloff, 2000), or easier engagement in verbal play (Sherzer and Webster, 2015). In the case of sharing visual representations, as is somewhat evident in the figure above, the position of one's body relative the shared workspace provides information about the user's attention and potential next actions. We note that this prototype represents more than a simple superimposition of images. Machine learning algorithms are essential for its successful functioning. Skeletal tracking enables a mapping of motions or gestures to particular actions in the user interface, and to support the appropriate placement, alignment and sizing of the representation of the body, Note that this represents a very different use of deep learning than in the case of detecting audience feedback. In this case, machine learning algorithms provide a scaffolding or substrate for action, to support richer expressive potential to meeting participants – enhancing their social agency, rather than attempting to mediate social signals directly. By expanding the expressive repertoire, rather than designing to infer social signals directly, we believe we can enhance both productivity and provide users with resources for their own processes of ritualization.

CONCLUSION

These are but two examples from a range of activities within one ongoing research effort, which, as mentioned, is mostly focused on applications of artificial intelligence in remote collaboration. Our efforts thus represent only one small corner of what we believe is a much larger space of opportunities made possible by explicitly recognizing the social and ritual dimension of meetings. Moreover, by thinking about meetings as rituals we can ask how, and in what situations, technologies might undermine social agency and introduce risks, or conversely enhance participants' sense of agency. It's not that these considerations lead to simple and straightforward design directions. While it was relatively easy for us to distinguish between meeting types on the basis of relatively static parameters (e.g.,. meeting size, familiarity of participants), we are still pondering how to enable teams to fluidly transition among different social framings *in situ*.

Attention to the ritual dimension of meetings may be beneficial beyond technology design. First and most simply, current discussions of the future of work that focus too heavily on the simple binary distinction between "home" and "office" might do well to consider the ways that different types of meetings entail different roles and modes of participation that may be more or less appropriate for remote or copresent meetings. In social science research more generally, seeing the process of ritualization in meetings might be useful for connecting detailed attention to the ways ritualization in meetings connects with broader questions of social scientific interest, including the complex relationship among technologies, professional identity formation and institutions (Orlikowski and Barley, 2001) or issues of diversity, equity and inclusion. Considerable evidence has shown, for instance, that women bore a much heavier burden balancing home and work tasks during the early days of the pandemic, and that individuals from communities with limited technical access were seriously disadvantaged during the period of social distancing (Parker et al, 2022). The effects are still being felt, and have affected professional relationships and career trajectories. How might the effects of other, more subtle differences, such as preferences or toleration of

latency in turn-taking, the use of gaze, or other factors affected by technology and contributing to ritualization create disadvantages for certain attendees?

Conversely, by looking closely at the relationship between technology and meetings-as-rituals, we might ask what new kinds of rituals, identities or relationships we might facilitate. How might novel ritualization practices disrupt traditional forms of disadvantage, subjugation or denigration of the work of certain people? How might designing for social agency provide workers with new ways of imagining work, or challenge prevailing ideas about what it means to be a professional (cf. Balka and Wagner, 2021)? What new social realities might we enable workers to create? More prosaically, how might we make meetings just a little less painful and exhausting? We are not yet done either with COVID or the changes it has wrought, there are still many questions to ask and hopefully more possibilities to imagine. Hopefully the lens we have introduced in this paper helps contribute to that endeavor.

END NOTES

1. This paper is dedicated in loving memory to our friend and colleague Suzanne Thomas, without whom this project would never have been completed. She led the early phases of research and analysis, and was first to note the distinctions underlying this paper. The authors would also like to kindly acknowledge Liubava Shatokhina for her thoughtful feedback on earlier drafts. Any errors or inaccuracies are the responsibility of the remaining authors.

2. We were not prescriptive about the definition of "meeting," recognizing that formal definitions of what counts as a meeting have met with difficulty (Sandler and Thedvall, 2017), and is more likely matter of family resemblance (Wittgenstein, 1953), that is, sharing no set of essential features, but rather displaying a set of overlapping similarities: attendance by multiple participants, embeddedness within a professional or bureaucratic setting, and a sense of instrumental or organizational purpose. Participants often explicitly described or named meetings in terms of their purpose or their attendees (e.g., "sales meetings", "client update meetings", "committee meetings," etc.)

3. This name, as with all others used in this paper, is a pseudonym

4. Our sincere gratitude to our colleague Julio Zamora-Esquivel (who is pictured in Figure 1) for his creative and technical wizardry and leadership in the creation of this prototype.

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