1. Bringing technological affordances into virtual work

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Scholars have been studying virtual work for over two decades, since the late 1990s, and even longer dating back to the research on computer-assisted collaboration in the 1970s and 1980s. Despite its growing prevalence over a number of decades, the Covid-19 pandemic truly brought virtual work to the forefront and normalized it, as safety concerns made it the only option for many knowledge workers. The resulting temporary and permanent work-from-home mandates have fundamentally transformed the workplace and changed the nature and meaning of virtual work. Although it has been defined in multiple ways, most definitions of virtual work center around work that is conducted across geographical and temporal boundaries, and which is conducted largely through information and communication technologies (ICTs) (Gibson & Gibbs, 2006; Kirkman & Mathieu, 2005; O’Leary & Cummings, 2007). A co-citation analysis of the literature found that virtual work research tends to be siloed into three main research domains: telecommuting, virtual teams, and computer-mediated work (Raghuram et al., 2019). While these areas are all forms of technologically mediated work, they refer to differing work arrangements: telecommuting or telework refers to individuals working outside of the office from home or another shared space (Gajendran & Harrison, 2007), whereas virtual teams are composed of members working in formal offices from different locations (Gilson et al., 2015). Computer-mediated work occurs more broadly in organizational settings and is not limited to teams (Makarius & Larson, 2017). When we talk about virtual work in this chapter, we are referring to all three domains.

This chapter reviews prior research on the role and impacts of ICTs in virtual work. It then reviews the technological affordances perspective and argues for the need to incorporate this perspective into the virtual work scholarship. While much of the prior literature on virtual work has been dominated by implicit comparisons with face-to-face interactions that assume that technology will have detrimental effects on workplace interaction (Gibbs et al., 2008), an affordances perspective draws attention to not just the drawbacks of ICTs but the affordances or possibilities for action engendered by particular media (Treem & Leonard, 2013). The chapter ends by highlighting contemporary trends facing virtual workers and proposing future research directions to invigorate the virtual work literature and better account for technological innovations and other changing workplace trends.

UNDERSTANDING THE ROLE OF TECHNOLOGY IN VIRTUAL WORK

While technology use is heavily present in virtual work, the role of technology remains undertheorized in much of this scholarship. For instance, a review of 15 years of virtual teams research found that only about half of the studies reviewed empirically measured technology
use (Gibbs et al., 2017). Of those studies that do measure technology use, there is a lack of consistent and comparable measures (Gilson et al., 2015). A common measure of technology use is the percentage of communication that takes place using computer-mediated communication (CMC) (e.g., Rapp et al., 2010); however, measures differ across studies both in terms of which technologies are studied and how their usage is measured.

Technology is often studied under the umbrella term of “virtuality”, especially in the virtual teams literature. The term “virtual” has been used loosely to refer to phenomena as different as geographical dispersion, electronic dependence, cultural diversity, and dynamic structure (Gibson & Gibbs, 2006). Studies tend to either study the impact of a single technology in isolation, or lump diverse technologies together into vague concepts such as “electronic dependence” or “virtuality” (Gibbs et al., 2017). While there are benefits to studying such broader concepts, such terms do not account for the fact that diverse technologies (e.g., email, instant messaging, videoconferencing, social media) may be used very differently and have different consequences for virtual workers. In addition, many studies of virtual work take technology use for granted by studying virtual work arrangements, without explicitly measuring or assessing the types of technology or their usage patterns.

According to a review of ten years of virtual teams scholarship (Gilson et al., 2015), most of this research finds that technology is either detrimental to, or has no effect on, virtual team performance. Gibbs et al. (2008) similarly found a comparable pattern in older scholarship on virtual teams, and termed this dominant view the “deficiency model”. A deficiency model assumes that virtuality in general, and technology use specifically, has negative effects on team performance. It is grounded in the assumption that the limited nonverbal cues in CMC that provide important sources of social information in face-to-face interactions automatically lead to negative consequences and challenges for virtual team interaction and performance, by making it more difficult to achieve understanding and form interpersonal relationships. For instance, Andres (2012) found that technology use hindered team communication by leading to lags in information exchange, more misunderstandings, and less coherent messages. This view is rooted in a conceptualization of CMC as inherently impersonal and task-oriented compared with face-to-face interactions (Walther & Burgoon, 1992). It is important to note that most studies of virtual teams focus on conventional tools such as email, chat, and discussion boards rather than new and emerging technologies (e.g., social networking tools, 3D virtual environments, cloud technologies, or ubiquitous computing platforms), such that research has not kept pace with practice (Gilson et al., 2015). Newer technologies are more interactive and immersive, and thus may be more conducive to interpersonal relationship formation.

Despite the prevalence of the deficiency model in virtual teams research, other research on computer-mediated work has found that technology use has positive effects. For instance, Bryant and colleagues (2009) found that the use of certain communication technologies could decrease social loafing. CMC use has also been found to decrease status differences (Anderson et al., 2007) and increase participation equality among team members – although it makes it more difficult to reach a consensus (Hollingshead & McGrath, 1995), and that the use of multiple media can help to manage task complexity (Kock & Lynn, 2012). The more recent research on enterprise social media (ESM) documents benefits for knowledge sharing and relationship formation, including enhancing strategic self-presentation (DiMicco et al., 2009; Leonardi & Treem, 2012), providing network transparency that motivates participation (Brzozowski et al., 2009), and facilitating cross-boundary communication (Gibbs et al., 2015).
Still other studies recognize that various technologies have nuanced positive and negative effects, depending on contextual factors that shape how they are used. For instance, an early study of a group decision support system (GDSS) proposed and found that it had both positive and negative effects on conflict management, depending on the nature of the GDSS and how the group applied it (Poole et al., 1991). Much of the computer-mediated work research at the organizational level draws on perspectives from sociomateriality or practice theory that recognize that new technologies are mutually imbricated with social contextual factors (Leonardi, 2011; Oborn et al., 2019; Orlikowski, 2007) and that their use and impacts depend on the social contexts in which they are embedded (Barley, 1986; Mazmanian, 2013). This line of research moves away from a focus on positive or negative effects of technology toward broader theorizing of the ways in which technology contributes to organizational transformation.

Studies also take different approaches to the study of technology and make different implicit assumptions about the role of technology and its effects on work processes and outcomes. Gibbs et al. (2017) categorized these studies into three main types: “effects” studies that use student samples to test the effects of technology on team processes and outcomes, “process” studies that rely on organizational field studies to assess the role of technology in organizational processes, and “comparative” studies that use laboratory studies to compare the effects of face-to-face and CMC teams or compare effects of different technologies. While “process” studies are more likely to document benefits or nuanced impacts of technology, “effects” and “comparative” studies are more likely to document negative effects – perhaps because of their (implicit or explicit) comparison with face-to-face interactions. Differences in treatment of technology as a challenge or benefit are also evident across different domains of virtual work, with the telework and virtual teams literatures being more likely to document challenges, while the CAW domain is more likely to regard technology use as beneficial (Raghuram et al., 2019). In the next section, we propose the affordances perspective as a useful theoretical framework that can help to integrate the fragmented virtual work scholarship.

**THE AFFORDANCES PERSPECTIVE**

Organizational scholars across disciplines such as communication, management, and information science are increasingly taking an affordance approach to explain the unique ways in which actors perceive and utilize technology to communicate across their organizations. The concept of affordances was originally defined by Gibson (1979), who refers to an affordance as an action possibility. Gibson argued that affordances exist in the natural environment as attributes of objects that require an interaction between actor and said object, that are independent of the actor’s perception, needs, or goals, but that are relative to the actor’s perception and capabilities. For example, an acacia tree may provide a place of refuge for a bird, but a food source for a giraffe. In this way, objects may afford different possibilities for different actors. Since Gibson’s original work in ecological psychology, scholars of human–computer interaction have adapted this framework to explain the user–technology relationship.

Norman’s (1988) human-centered design perspective has proven useful to explain technological affordances. Similar to that of Gibson, this perspective implies that affordances are perceived by the actor, however, it differs in that it argues that affordances may also be *shaped* by the user (McGrenere & Ho, 2000). This perspective focuses on the technology’s design, how users perceive the features of the ICTs with which they engage, and treats affordances
as inherent or “built-in” to the technology. In other words, this perspective implies that a particular role of a pre-existing affordance depends on whether and how the actor perceives the affordance, and thus how the actor applies it (Rice et al., 2017).

In contrast, Hutchby (2001) was among the first to illustrate a way of analyzing technological shaping of sociality through examining affordances. Hutchby examines affordances through a social constructivist lens which illuminates how social processes are involved in all aspects of technology. He claims that scholars have become too fixated on the social shaping of technology, which undermines the exploration of the technological shaping of social action. His work argues for recognition of both the enabling and constraining materiality of artifacts and that our interpretations and uses of technology are constrained in analyzable ways by the ranges of affordances available through them. This position differs in that it goes beyond the affordances-as-inherent approach, such as that assumed by scholars such as Norman (1998), to contend that users may either perceive or not perceive affordances which are socially constructed and frame users’ actions.

As we will demonstrate in the following sections, affordances can indeed either enable or constrain communication, can produce positive, negative, or paradoxical outcomes, and can have both intended and unintended consequences. An affordance approach to studying virtual work may help to explain why individuals using the same technology may engage in similar or disparate work practices and behaviors and uncover distinct possibilities for action in technology-reliant work settings (Treem & Leonardi, 2013). Additionally, studying virtual work through the lens of affordances can help scholars and practitioners alike to encourage the positive outcomes, mitigate the negative consequences, and help workers to reconcile the many contradictions associated with technology use for work. However, there is still much debate about the epistemological and methodological approaches to studying affordances, and so we will conclude with several recommendations for extending this type of work.

TECHNOLOGICAL AFFORDANCES IN THE WORKPLACE

More recent theorizing on affordances indicates that media afford co-construction and sharing of intersubjective meaning (Suthers, 2006). The media affordances perspective has been heavily adopted in the literature on ESM to explain organizational knowledge sharing, self-presentation, and participation. For example, work done in the area of organizational media reveals that affordances pose significant implications for organizational communication processes. Treem and Leonardi (2013) argue that the dominant affordances of ESM such as organizational wikis, social networking applications, and blogs may undermine organizational socialization tactics, help to reduce uncertainty and increase information-seeking behaviors among organizational members, support interpersonal relationships among colleagues, increase knowledge sharing, reduce resource dependency, allow for more participation in discursive construction, and increase opportunities for surveillance.

A wide variety of affordances have been identified in the literature. Some of these include visibility, persistence, editability, association, personalization, pervasiveness, searchability, evaluability, signaling, self-presentation, accessibility, social presence, privacy, and anonymity (DeVito et al., 2017; Fox & McEwan, 2017; Gibbs et al., 2021; Leonardi & Treem, 2020; Navick & Mazur, 2021; Rice et al., 2017). These various affordances have been found to both
enable and constrain communication, produce both positive and negative outcomes, and have a variety of social, material, or procedural consequences.

Out of all of the technological affordances that have been studied by this line of research, visibility has been given the greatest attention. Communication scholars have theorized visibility as the defining feature of contemporary CMC (Treem et al., 2020) and argued that visibility should be understood as the root affordance of CMC (Flyverbom et al., 2016). Visibility refers to the ability to make behaviors, knowledge, preferences, and network connections that are typically invisible, visible to others through ICTs (Treem & Leonardi, 2013; Leonardi & Treem, 2020). Some examples of features that afford visibility are status updates, personal profiles, commenting and opinion expression functions (e.g., like buttons), content publishing, or pushing content to subscribers/followers (DiMicco et al., 2009; Farzan et al., 2008; Holtzblatt & Tierney, 2011). Leonardi and Treem (2020) contend that digital connectivity arising from the increasing digitization, digitalization, and datafication of work is leading to greater behavioral visibility in organizations. For more on this shift, see Chapter 2 in this volume by Sivunen et al.

Visibility has generally been discussed as a unidirectional affordance in which information goes from being invisible to visible, and to have generally positive outcomes. However, recent research on workplace cybersexual harassment (Navick & Mazur, 2021) exemplifies how the visibility afforded by various technology can be bidirectional and also produce negative outcomes. In their study, Navick and Mazur found that just as technology affords visibility, some technologies afford the potential for strategic invisibility through direct messaging, temporary image sharing, and other technological functions. This strategic enactment of invisibility makes incidents of cybersexual harassment among remote co-workers easier and more likely to be perpetrated as the harassment can be done out-of-sight of other organizational members. Similarly, several other studies have suggested that experienced remote workers are aware of the affordances of their technology and frequently utilize strategies and work-arounds in order to either enable or constrain communication with other organizational members (Gibbs et al., 2013; Leonardi et al., 2010). This research stream demonstrates not only user awareness of affordances, but users’ ability to manipulate virtual communication through them and the potential for both positive and negative outcomes that can arise.

Paradoxes and Tensions

While the technologies that enable virtual work have introduced various capabilities and affordances that allow for increased work flexibility, knowledge sharing, collaboration and other elements of productivity and convenience, they present a clear set of challenges and discrepancies as well. One way in which these discrepancies in virtual work experiences have been captured is in research examining tensions and paradoxes. Both paradoxes and tensions help scholars to explain how the use of communication technologies pulls virtual workers in different directions and represents constructs that stand in conflict with one another. In the context of virtual work, they are experienced with communication technology uses that are in opposition or self-contradictory. However, tensions and paradoxes provide flexible analytical constructs that simultaneously explain positive and negative consequences and their interrelationships. A number of paradoxes have been observed in virtual work research examining the paradox of far-but-close in perceived proximity (Wilson et al., 2008), the autonomy paradox...
Affordances, in particular, have presented a unique set of tensions, paradoxes, and strategic responses. For example, Leonardi et al. (2010) investigated the connectivity paradox and found that teleworkers who cited flexibility and focus as desirable qualities of working away from the office felt too connected to the office despite having a remote work arrangement. Workers felt that rather than affording the desired flexibility, communication technologies which afford greater visibility led to far more last-minute communication from colleagues and supervisors about changes and tasks, leading workers to have no actual control over their schedules, as they were at the mercy of their visible availability. In another similar study on the management of tensions arising from the affordances of ESM, Gibbs et al. (2013) found that the excessive openness of ESM platforms created a dialectic of openness and closure for distributed knowledge workers. This created the need for them to manage tensions in their work of visibility vs. invisibility (e.g., being accessible to others while protecting their time), engagement vs. disengagement (e.g., engaging with incoming information streams without getting sucked in), and sharing vs. control (e.g., openly sharing knowledge while also maintaining confidentiality of proprietary information and protecting their own job security). As a result of these tensions, workers drew on contradictory affordances to both share knowledge and to strategically limit what others could see, to manage demands on their time and attention while maintaining face with colleagues. These findings illustrate some of the paradoxical ways in which virtual workers manage tensions arising from technology use. This is just one way in which the affordances view captures both positive and negative consequences of technology.

Challenges and Debates in the Affordances Literature

Despite the many benefits of studying virtual work from an affordances perspective, explicating and measuring affordances has been a challenge for many scholars working in this area. Primarily, the ways in which affordances have been conceptualized in the extant literature are highly inconsistent. Additionally, there have been a number of epistemological and methodological debates on whether or not affordances can be quantified, and if they can be, how they should be operationalized. Critics of the perspective have responded to both of these points in question in various ways.

For example, in their review of the affordances literature, Evans et al. (2017) identify three inconsistencies regarding the use of the term “affordances”. First, there appears to be a lack of interdisciplinary exploration and a lack of engagement of other scholarship exploring the same affordances. Second, studies often identify lists of affordances without conceptually developing each one. Third, much research claims to adopt an affordance perspective in instances where the discussed affordance does not meet the commonly accepted definition. As a result of their findings, Evans et al. (2017) present a conceptual framework for understanding affordances using three criteria for evaluating assumptions about them: (1) confirm the proposed affordance is neither the object not a feature of the object, (2) confirm the proposed affordance is not an outcome, and (3) confirm the proposed affordance has variability.

Additionally, most of the research examining affordances thus far has been predominantly interpretive and examines affordances as emergent constructs that can be captured using

(Mazmanian et al., 2013), the connectivity paradox (Leonardi et al., 2010), and the vitality paradox (Nordbäck et al., 2021).
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Qualitative methods that capture a wide range of individual experiences and perceptions of technology users. Other researchers have attempted to quantify affordances, but have treated affordances as fixed or invariant. For example, many experimentalists operationalize affordances using dichotomous categorization such as “absent” vs. “present” and “low” vs. “high” (Schouten et al., 2007; Walther, 2009). Others have measured users’ motivations around affordances (Sundar & Limperos, 2013) and specific channels or types of channels and their affordances (Ledbetter, 2009). However, even among quantitative scholars, this approach has been critiqued, with some scholars arguing for a need to assess perceived affordances in a unified, psychometrically sound manner that goes beyond dichotomous categories, motivations, and technology itself (Fox & McEwan, 2017; Kuo et al., 2013; Rice et al., 2017).

In response to these critiques, scholars such as Fox and McEwan (2017) and Rice et al. (2017) developed scales to assess perceptions of multiple social affordances across multiple communication channels and contexts. Fox and McEwan (2017) justify the need for their assessment tool in arguing that individual differences among technology users in terms of cognitive capacity, media literacy, or physical limitations could affect how a user may evaluate an affordance of their technology, and moreover, how users could fail to even recognize their presence at all. Rice et al. (2017) similarly argue that there is great value in operationalizing perceptions of organizational media affordances quantitatively in that doing so presents the possibility for identifying a consistent and broad set of affordances that transcends individual motivations and use of particular media.

These epistemological and methodological debates raise questions as to how affordances should be conceptualized, how they should be operationalized, and whether affordances are inherent or perceived. However, what is clear is that across this great debate there is a consensus that affordances should continue to be studied. This also suggests that the affordances perspective offers methodological flexibility and utility for scholars from a variety of epistemological camps. The next section will outline several ways in which taking an affordances perspective can help to enrich and unite the scholarship on virtual work.

**BENEFITS OF TAKING AN AFFORDANCES PERSPECTIVE FOR VIRTUAL WORK SCHOLARSHIP**

Bringing an affordances perspective into virtual work scholarship has the potential to enrich this area in several important ways. First, this approach allows scholars to examine the pros, cons, and more nuanced paradoxical outcomes and effects of technology use. Second, the affordances approach is highly versatile and can be examined across disciplines, paradigms, and through various methods thus helping to bridge and integrate the virtual work scholarship. Third, it provides the flexibility and adaptability required to respond to the ever-changing role of technology in the practice of virtual work and beyond.

**Theorizing the Role of Technology**

First, the affordances lens provides a fruitful framework for theorizing the role of technology and the user–technology relationship. Much of the virtual work scholarship treats technology as a backdrop and focuses on social and psychological processes and outcomes, without explicitly theorizing about the role of technology characteristics. Further, the virtual work research

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that exists often takes a “deficiency model” approach that assumes that CMC is inherently deficient in social cues and will negatively impact team processes and performance (Gibbs et al., 2008). This view is also known as the cues-filtered-out (CFO) perspective (Culnan & Markus, 1987). It includes a number of older CMC theories including Social Presence Theory (SPT) (Short et al., 1976) and Media Richness Theory (MRT) (Daft & Lengel, 1986). SPT argues that systems with greater social presence, in terms of bandwidth or number of nonverbal communication cues, increase the salience of others as well as the warmth and friendliness of social interactions. MRT focuses on the key construct of information richness and argues that users perform a rational process of matching up the medium with the task or message, and that there is an optimal match between the equivocality of the communication task and the richness of communication media used. These theories share the assumptions that (1) media use is determined by inherent characteristics of the medium (such as social presence or richness) and (2) that the lack of socioemotional cues in CMC make it inherently unsuitable for interpersonal communication (Walther & Parks, 2002). Other theoretical perspectives, such as the Social Influence model (Fulk, 1993; Fulk et al., 1990), focus more on social norms and pressures that drive media choice and the ways in which technologies are adopted within particular social and organizational contexts.

While CFO perspectives have dominated the virtual teams and virtual work research, this perspective has been challenged by CMC scholars. For instance, Social Information Processing (SIP) Theory (Walther & Burgoon, 1992) rejects the notion that the lack of nonverbal cues makes CMC inherently impersonal or unsuitable for interpersonal relationships, arguing that communicators are motivated to form impressions and develop relationships even in the absence of individuating information online, and that they may place greater importance on the fewer cues available. Further, when given more time, CMC interactants are found to form satisfying interpersonal relationships (Walther, 1992; Walther & Parks, 2002), and they may even form hyperpersonal relationships that reach intimacy more quickly than in person (Walther, 1996). While the CMC research has moved beyond the view that CMC is inherently impersonal and task-oriented through development of SIP Theory (Walther & Burgoon, 1992) and the Hyperpersonal Perspective (Walther, 1996), these theoretical perspectives have not permeated the virtual work research and remain confined to the research on interpersonal communication.

Treem and Leonardi (2013) were the first organizational scholars to theorize the affordances of social media (such as blogs, wikis, and social network sites) in organizations. They outline four key affordances: visibility, association, editability, and persistence, and theorize that they have the potential to transform organizational communication processes including socialization, information sharing, and self-presentation. Fulk and Yuan (2013) further theorize that the affordances of ESM can help to overcome organizational knowledge-sharing challenges including location of expertise, motivation to share knowledge, and building social capital with knowledge providers. Ellison et al. (2015) propose that enterprise social network sites (e.g., Yammer or Slack) are beneficial for relationship formation and knowledge sharing due to the fact that they provide greater identity information in the profile, which acts as a social lubricant to help initiate conversations with strangers across distributed organizations.

An affordances lens thus shifts the paradigm from the assumption that face-to-face communication is the “gold standard” or optimal form of communication, and allows for nuanced consideration of both benefits and drawbacks of technology use, and the tensions that often arise among them. This helps to overcome technological determinism, or the view that tech-
nology has deterministic outcomes on social behavior (Sturken & Thomas, 2004), a view that has been heavily critiqued as limiting our understanding of the ways in which digital technologies are implicated in virtual work.

**Bridging and Integrating the Virtual Work Scholarship**

Second, affordances can be studied across a range of contexts, levels of analysis, and methods. This includes studies of telework at the individual level, team-level interactions, and broader organizational contexts. As empirically demonstrated by a co-citation analysis of the virtual work literature, scholarship has been fragmented across contextual domains, being siloed into three main areas: telecommuting, virtual teams, and computer-assisted work (CAW) (Raghuram et al., 2019). This has implications for the level of analysis studied, as the telecommuting research (e.g., Bailey & Kurland, 2002; Gajendran & Harrison, 2007) tends to focus on the individual level, the virtual teams research (e.g., Gibson & Gibbs, 2006; Hinds & Mortensen, 2005) tends to focus on the team level, and the CAW domain (e.g., Walther, 1992; Daft & Lengel, 1986; DeSanctis & Poole, 1994) spans individual, group, and organizational levels. These disparate research clusters also differ in terms of the types and range of technologies studied, as well as whether they regard technological mediation as an asset or a hindrance (Raghuram et al., 2019).

The virtual work literature is also fragmented in terms of conceptualizations of virtuality, methods, and team types. The term virtuality has long been contested, with various typologies being developed (Chudoba et al., 2005; Gibson & Gibbs, 2006; Kirkman & Mathieu, 2005). For instance, Kirkman and Mathieu defined team virtuality in terms of three dimensions: the extent of use of virtual tools to coordinate and perform team processes, the amount of value derived from them, and the synchronicity of team member interaction. Chudoba et al. conceptualized virtuality in terms of organizational discontinuities (changes in expected conditions) and identified three dimensions of virtuality: team distribution, workplace mobility, and variety of practices. Gibson and Gibbs defined virtuality in terms of four dimensions: geographical dispersion, electronic dependence, national diversity, and dynamic structure. Other researchers have eschewed the term “virtual” and studied similar phenomena under the label of distributed work or teams (Cramton et al., 2007; Hinds et al., 2002; O’Leary & Cummings, 2007) or computer-assisted groups (Hollingshead & McGrath, 1995). While some scholars regard geographical dispersion as the defining feature of virtuality (O’Leary & Cummings, 2007), others do not consider it a necessary condition (Kirkman & Mathieu, 2005). More recently, scholars have problematized the notion of virtuality by arguing that digital technologies have become so ubiquitous that virtual teams can no longer be distinguished as separate from non-virtual teams (Gibbs, 2017; Gilson et al., in press).

The virtual teams literature is highly interdisciplinary, spanning disciplines as diverse as management, communication, information systems, computer science, engineering, and applied psychology (Gilson et al., 2015). The research has also been bifurcated methodologically into experimental laboratory studies using student samples and field studies using in situ organizational teams, without consideration of how team type and design impact research findings (Gibbs et al., 2017). Research is often compared without consideration of whether the team types and configurations are actually comparable, when the design and method used may lead to biases in research findings around topics such as leadership, cultural diversity, and technology use. For instance, Gibbs et al. found that research finding that virtual teams
perform poorly compared with face-to-face teams was often based on short-term, zero history lab studies in which participants had limited time to learn a new technology, and that longitudinal studies of naturally occurring teams found that technology played a more positive role in team processes.

Taking an affordances approach can help to bridge and integrate the virtual work scholarship across its traditionally siloed domains (Raghuram et al., 2019) and designs (Gibbs et al., 2017). Affordances can be studied at any level of analysis, and studies have examined them at the individual or interpersonal level (e.g., Erhardt & Gibbs, 2014), at the team level (e.g., Erhardt et al., 2016), and at the organizational level (Gibbs et al., 2013; Majchrzak et al., 2013; Treem & Leonardi, 2013). Indeed, the theoretical and empirical frameworks that have been developed to assess affordances are all applicable across a range of levels of analysis (Evans et al., 2017; Rice et al., 2017; Leonardi & Treem, 2020). The affordances approach can help resolve conflicting findings as well as make room for new forms of virtual work, such as the remote work arrangements of the Covid-19 pandemic imposed by employers’ work-from-home mandates. Remote work within contexts like Covid-19 is similar to telework in that it involves working from a home office, yet it differs in that it has been forced upon millions of workers without support in terms of space, infrastructure, equipment, or child care, rather than being a voluntary or privileged arrangement.

**Responding to the Ever-Changing Technological Landscape**

Finally, an affordances perspective is flexible and responsive to the ever-changing technological landscape in organizations. It can be hard for scholars and practitioners to keep up with the constant proliferation of new technological innovations in the workplace. Focusing on particular channels or platforms provides limited explanatory value and risks becoming irrelevant once these technologies become obsolete (Ellison & boyd, 2013). It also misses broader connections across various tools that may be used in similar ways toward similar ends. For instance, teams have moved from reliance on group-decision support systems (GDSS) (DeSanctis & Poole, 1994; Poole et al., 1991) to knowledge management systems to ESM (Slack, Google Hangouts, Yammer), to artificial intelligence tools such as chatbots and learning algorithms (Araujo, 2018; Bailey & Barley, 2020) and use each platform for similar goals of collaboration, decision-making, and knowledge sharing. Focusing on particular platforms makes it difficult to compare results across studies.

By contrast, the affordances lens is enduring across specific tools and technologies. Its focus on the relationship between the goals and perceptions of users and the capabilities of the technology draws focus away from the tool or platform itself and toward its capabilities and how it allows users to attend to personal or organizational goals. Thus, it helps to provide theoretical explanations that take into account the role of technological features while also having broader relevance and being more enduring over time. In this way the affordances perspective is both responsive to particular contexts while also generalizing across contexts to provide broader understandings of the role of technology in virtual work.
THE “NEW NORMAL” OF VIRTUAL WORK AND ITS IMPLICATIONS

Current events such as the influx of an increasingly diverse workforce, increased accessibility of technological devices, and the rapid adoption of virtual work arrangements in response to the Covid-19 pandemic have all brought virtual work to the forefront. Because of this, scholars studying virtual work must account for these drastic changes in the virtual work landscape, study them more closely, and examine their social implications and consequences. We present three major issues in the virtual work literature and recommend further investigation of these and other major changes to the world of work through an affordance perspective.

Diversity, Equity, Inclusion, and Social Justice (DEIJ) Issues

The extant virtual work literature typically relies on fairly homogenous samples of Western, educated, industrialized, rich, and democratic (WEIRD) knowledge workers or students from well-resourced programs. This poses potential issues in practice, as such privileged samples have been critiqued for their lack of generalizability (Afifi & Cornejo, 2020; Brookshire, 2013). Unlike traditional knowledge workers, workers in lower income jobs (whether factory or service workers, gig workers, or manual laborers) are likely to face inequities in technological resources, training, and support as well as the access they have to virtual work arrangements (e.g., frontline workers). Underrepresented student populations who experience a variety of underrepresented intersectionalities and respective complications are also at a disadvantage (Navick, 2021). This became especially clear during the Covid-19 pandemic, in which forced remote, ICT-reliant work drastically exacerbated existing inequities for students from communities that have been disproportionately impacted by the pandemic (Van Dorn et al., 2020): non-traditional, first-generation, and marginalized student groups that experienced navigational challenges even prior to the pandemic (Yosso, 2005), and students from low-socioeconomic status (low-SES) who are at risk of struggling to sustain access to reliable technology (Gonzales et al., 2020).

While some scholars have responded to the few organizational and virtual work studies that focus on DEIJ issues by critiquing the existing literature (Ayega & Muathe, 2018), and attempting to address the research gap by examining gender issues or socioeconomically diverse populations (Navick, 2021; Navick & Mazur, 2021), few studies have taken differences in gender, race, class, sexuality, ability, and more into account when studying affordances and virtual work. We therefore propose examining how affordances may either enable or constrain individuals from diverse backgrounds, mitigate or exacerbate inequalities among different populations of workers, or capturing the variation of affordances in perception, usage, and motivation for usage across a diverse population as excellent and much-needed research avenues for scholars interested in extending this line of work.

Constant Connectivity and Well-Being

Rapid developments in technology enable greater access to telework and higher flexibility in work hours, both which have implications for remote workers’ turnover intentions, work–life balance, and well-being (Kossek et al., 2006). When considering virtual workers’ well-being, the connectivity paradox is one that workers and organizations should pay particular attention
to, especially now when virtual work is more commonplace than ever. Scholars have discovered that using communication technology for virtual work not only diminishes the perception of distance to others (Wilson et al., 2008), but simultaneously increases the expectations of constant connectivity for workers who are geographically distributed. This creates a paradox for workers who find the potential benefits of a telework arrangement negated by the communication technologies they use to facilitate it (Leonardi et al., 2010). Constant connectivity is defined as the expectations and opportunities to perpetually maintain contact with the office (Wajcman & Rose, 2011). This is often exemplified by expectations for immediate responses to asynchronous communication from others, afforded by technology.

Technological affordances, such as visibility, lead to constant connectivity behaviors that are unhealthy or stressful for workers. We know that teleworkers in search of flexibility and focus often find themselves more connected to the office than ever, particularly because of increased communication from well-meaning colleagues who wish to be inclusive (Leonardi et al., 2010; Gibbs et al., 2013). However, this practice leads to constant connectivity behaviors, in which virtual workers are always engaging with incoming information that is not bound by time or space. When constant connectivity becomes the norm, either at the team level or more broadly at the organizational level, expectations of being continually available might become an enforced rule, either through team-level concertive control (Barker, 1993; Gibbs et al., 2021) or at the institutional level. In an environment in which virtual workers are constantly bombarded with information, expected to keep up with it all, and continuously struggle to find socially legitimate ways to protect their jobs, workers develop their own strategic responses to reconcile tensions such as engaging in dissimulation behaviors, disengaging, and selectively sharing knowledge. Studying strategic responses to issues effecting the well-being of virtual workers, such as the issue of constant connectivity, is important for both scholars and practitioners as it can help to identify best and worst practices, establish healthy organizational norms or help to raise awareness about unhealthy norms surrounding the action potential of technology, and thus improve the well-being of virtual workers. While scholarly and corporate discourse generally promotes connectivity and collaboration as unmitigated goods, they also demand an increasing amount of energy and emotional resources from virtual workers, and these “costs of connectivity” should be further examined in future research.

The Effects of Covid-19

While some of the extant work surrounding technological affordances in the workplace has highlighted distributed work contexts, in particular (Ellison et al., 2015; Gibbs et al., 2013, 2015; Navick & Mazur, 2021), the affordances view has not been widely adopted by virtual work scholars. For instance, there is limited work on affordances in virtual teams, especially in the recent context of forced remote work due to the Covid-19 pandemic (Waizenegger et al., 2020). In parallel with the growing adoption of remote and virtual work arrangements, recent events such as the pandemic have complicated and challenged our views of technology, as virtual work has become the new normal. When face-to-face communication presents risks to one’s physical health, new technological affordances become apparent and applications such as Zoom and Microsoft Teams become some of the few options for workplace collaboration.

Companies that have long resisted virtual work have realized how much work can actually be conducted virtually. Some have even extended their work-from-home mandates indefinitely (Hadden et al., 2020). While on one hand this has shifted our thinking away from a defi-
ciency view of communication technology, on the other, new concerns about “Zoom fatigue” have arisen. While virtual work helps to preserve our physical health, it may be imposing new burdens on our mental health. This raises new questions about technological affordances and constraints in our current social context, and how our uncertain and changing circumstances are shaping the ways in which we incorporate technology into virtual work, as well as what the future of the workplace will look like.

The new era of Covid-19 of “forced” remote work (Nordbäck et al., 2021) has ushered in new directions for research on virtual work. Some of these new research avenues include studying the adoption of virtual or hybrid team collaboration in the post-Covid-19 era and the potential changes in (social) team dynamics, usage and potential of digital collaboration platforms in the post-Covid-19 era and its impact on communication effectiveness, knowledge sharing and decision-making, and a comparison of efficiency and effectiveness of team collaboration between pre-Covid-19 and during Covid-19 through an affordances lens (Waizenegger et al., 2020).

FUTURE DIRECTIONS SUMMARY

To address some of the challenges and gaps of studying affordances, we present four recommendations for applying an affordance approach to virtual work. First, it is critical that scholars studying affordances continue to apply and develop the affordances identified in previous literature (e.g., see DeVito et al., 2017; Fox & McEwan, 2017; Leonardi & Treem, 2020; Rice et al., 2017). Second, scholars should continue to analyze the paradoxes and tensions that arise in technology use due to competing pressures to connect and disconnect (Leonardi et al., 2010; Gibbs et al., 2013). Third, in order to ensure that researchers are actually studying affordances, it is vital to separate affordances from technology features, use, and usage outcomes. Lastly, we recommend applying an affordance perspective to a variety of current and relevant workplace topics such topics of DEIJ (Ayega & Muathe, 2018; Navick, 2021; Navick & Mazur, 2021), the implications of constant technology use and worker well-being (Kossek et al., 2006) and the impact of the Covid-19 pandemic (Waizenegger et al., 2020).

CONCLUSION

In this chapter we have reviewed prior research on the role and impacts of technology in virtual work and have argued for the need to incorporate an affordances perspective into virtual work scholarship as an opportunity to enrich and unify this fragmented and ever evolving research domain. Given the critical role of technology in enabling virtual work, more nuanced and up-to-date theorizing about the role of technology is an important step to broadening our understanding of remote, distributed, and virtual work. We provide examples of technological affordances that have been identified in the literature thus far, examine various positive, negative and paradoxical outcomes and consequences of technological affordances, and discuss the ongoing epistemological and methodological debates on how to best conceptualize and operationalize them. Most importantly, we highlight the benefits of taking an affordance approach to virtual work research in terms of theorizing the role of technology, helping to bridge and integrate the virtual work scholarship across disciplines and paradigms, and keeping abreast of
the ever-changing technological landscape. This will also help researchers extend scholarship to include new forms of virtual work in the contemporary environment, new technological innovations, and the changing significance of these technologies and work arrangements.

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