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Link to publication in VU Research Portal

Download date: 22. May. 2021

Computer-Mediated Communication in the Age of Communication Visibility

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This article argues that a distinctive aspect of computer-mediated communication (CMC) is the way it can make communication visible to others in ways that were previously impractical. We propose a theory of communication visibility that recognizes its multidimensional nature: resulting from activities that make communication visible, efforts by actors to see communication, and a sociomaterial context that influences possibilities for visibility. The different dimensions of communication visibility are explored as they relate to possibilities for action with CMC, and the ability of third-parties to view communication between others. Centering communication visibility in the study of CMC compels scholars to ask new questions regarding the interdependence of active, strategic efforts to make communication more or less visible to others, and the ways in which communication is assessed by observers. To facilitate ongoing research we offer an agenda for incorporating communication visibility into the study of contemporary and future forms of CMC.

Communication visibility has always been a hallmark of computer-mediated communication (CMC), and was a distinguishing aspect of early technologies like Usenet groups, discussion forums, and instant messaging platforms (Quan-Haase, Cothrel, & Wellman, 2005). Today, social networking sites, blogs, and virtual worlds afford communication visibility at a scope and scale greater than through previous CMC technologies. Some scholars have argued that we are entering an age of communication visibility (Hansen & Flyverbom, 2015; Leonardi, 2014; Stohl, Stohl, & Leonardi 2016), and that visibility can serve as a general category for social scientific study (Brighenti, 2007).

We argue that the nature of visibility afforded by contemporary CMC, in which individuals have numerous choices to present or access communication and that communication is made visible for third parties and unintended recipients to easily see, portends significant changes to the way meaning is conveyed and produced through communication. Our existing theories of CMC are not well-equipped to address the multidimensional nature of communication visibility and are largely based on extensions or re-formulations of traditional interpersonal and mass communication frameworks. To remedy this problem, we offer a three-dimensional framework for a theory of communication visibility. This theoretical lens is based upon three important aspects regarding the relationship between visibility and CMC: (a) communication visibility is the root affordance, or possibility for action, for CMC, (b) CMC is distinct among other modalities of communication in that it makes communication immediately visible across time and locations to both immediate audiences and third parties, and (c) the ability of individuals to influence or manage the visibility of communication is a product of the sociomaterial context of CMC use.

Communication visibility

In order to present a theory of communication visibility we must first provide explication of the concept of communication visibility and seek to define the term. Following Chaffee's (1991) framework for explication, we first examined how the concept of visibility has been defined and used in past relevant work (i.e., in doing so we recognize that visibility has long been considered a key construct in mediated communication). Indeed, visibility was recognized as a core concern of early CMC theorists who recognized that technologies that facilitated interpersonal communication were designed to enable "socially translucent systems" (Erickson & Kellogg, 2000). In these early studies, visibility referred to the ways in which individuals' presence, activity, and communication were made noticeable to other users. For example, Bregman and Haythornthwaite (2001) conceptualized visibility as "the means, methods, and opportunities for presentation; in our usage it primarily addresses the speakers' concerns with the presentation of self" (p. 5). Visibility has also been examined specifically within the context of online media, where scholars have been concerned with the extent to which material is or is not prominently displayed or easily available online (Bucher, 2012; Thompson, 2005).

Table 1 displays several definitions of visibility. Reviewing these definitions reveals that more recent conceptualizations by communication researchers have treated visibility as an interplay between those who provide communication and those who observe communicative acts (e.g., Treem & Leonardi, 2013; Leonardi, 2014). In particular, the definition from Stohl, Stohl, and Leonardi (2016) is of note because it presents visibility as multifaceted—a product of an environment in which individuals are able to communicate and others are able to access that communication.

Brighenti (2007) argues that visibility has both relational and strategic qualities that are enacted in the process of "seeing and being seen" (p. 325). Though simplistic, this view offers an important extension beyond unidirectional views of visibility, and sees visibility as mutually constituted in the activity of actors and their orientation to observers. There is an inherent interdependence between the efforts to make something visible, efforts to see something, and the extent to which a context makes those activities easier or more difficult. Consider characterizing the visibility of a performance at a theater: One could be referring to how actors moved around the stage and dressed in bold costumes, to the ease of viewing the show from floor-level seats, or how the performance was partially obstructed by the columns in the building. Any, or all, of these aspects could influence how one characterizes the visibility of the performance.

**Table 1** Definitions of visibility in relevant literature

Source	Definition
Bregman and Haythornwaite (2001)	'refers to the means, methods, and opportunities for presentation; in our usage it primarily addresses the speakers' concerns with the presentation of self.' (p. 5)
Brighenti (2007)	'Visibility lies at the intersection of aesthetics (relations of perception) and politics (relations of power)' (p. 324)
Treem & Leonardi (2013)	'The ability to make [users'] behaviors, knowledge, preferences, and communication network connections that were once invisible (or at least very hard to see) visible to others in the organization. Our notion of visibility is tied to the amount of effort people must expend to locate information.' (p. 150)
Stohl, Stohl, & Leonardi (2016)	'the combination of three attributes: *availability* of information, *approval* to disseminate information, and *accessibility* of information to third parties.' (p. 124)
Hatuka & Toch (2017)	'constitutes forms of noticing, managing attention and determining the significance of events and subjects.' (p. 985)

Our explication of communication visibility recognizes and embraces the multidimensional nature of visibility in CMC. We conceptualize communication visibility as follows:

Communication visibility refers to the outcomes of activities through which actors strategically or inadvertently: (a) make their communication more or less available, salient, or noticeable to others, and (b) view, access, or become exposed to the communication of others, as they (c) interact with a particular sociomaterial context.

In practice, scholars who seek to explore communication visibility in their research may utilize multiple aspects of communication visibility, and have myriad options for operationalizing communication visibility as a relevant variable in examining communication processes. To represent the varied operationalizations possible, we offer a three-dimensional view of communication visibility. Figure 1[1] provides a visual description of a space of possibilities for types of operationalizations, which reflects the different dimensions of our conceptual definition. The first dimension is an actor's activity. This activity could take the form of an online publication, contribution, profile, network connection, or other visible communicative act of CMC. The second dimension considers the actions taken by others, who are not directly party to the communication, to view communication. These actions can include accessing a website, lurking on a social networking site, or reading through the archives of past online conversations. The third dimension is the sociomaterial context of communication. This dimension could consist of the number of individuals on a platform, the volume of online contributions, or the privacy settings available to users.

These dimensions of communication visibility can be analyzed singularly or collectively. As an example, consider how one might research the sharing of relational information online. One could study the different ways individuals choose to share information (i.e., what they share and where), how individuals seek out information about others' relationships (i.e., what they view and where), or
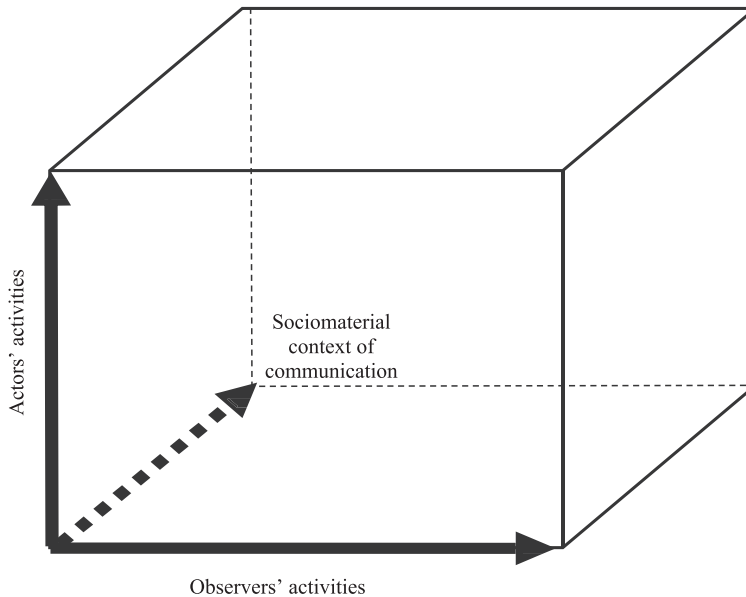
Figure 1 A three-dimensional view of the operationalization of communication visibility.

whether sharing behaviors relate to perceived efficacy in the use of privacy settings (i.e., how they view contexts as capable of managing visibility). Many questions will require working across dimensions; for example, evaluating whether efforts to make communication more visible are successful requires both measurement of what behaviors communicators engaged in as well as what observers evaluated. Additionally, scholars could examine how the use of CMC tools over time—by communicators or observers—can change the sociomaterial nature of a space (e.g., as older adults join a social networking site it may become less attractive to younger users as a platform for social interaction).

A theory of communication visibility

Given this explication of communication visibility, our theory of communication visibility in CMC can be characterized as a Type II theory in terms of Gregor's (2006) classification of theories. Gregor distinguishes five interrelated types of theory: (I) theory for analyzing, (II) theory for explaining, (III) theory for predicting, (IV) theory for explaining and predicting, and (V) theory for design and action. Our aim is to present a theory that not only describes communication visibility, but also provides explanations about which factors contribute to its emergence and the possible associated consequences. Thus, we are presenting a theory for explaining here, one that "explains primarily how and why some phenomena occur" (Gregor, 2006, p. 624). Type II theories are not aimed at formulating testable propositions, but aimed at understanding "how things are or why they are as they are" (p. 624).

Thus, our theory aims to clarify what communication visibility in CMC is, how communication visibility emerges in CMC use, and the possible consequences associated with communication visibility in CMC. Our theoretical lens is based upon three basic foundations: (a) communication visibility is the root affordance, or possibility for action for CMC, (b) communication through CMC is made visible

across time and locations to both immediate audiences and third parties, and (c) the ability of individuals to influence or manage the visibility of communication is a product of the sociomaterial context of CMC use.

Visibility as a root affordance

Central to our argument is the claim that visibility can be understood as the *root* affordance of CMC (Flyverbom, Leonardi, Stohl, & Stohl, 2016). The metaphor of a root is chosen not only to depict the central and fundamental nature of visibility in CMC, but also the ways that other possible affordances spring from and are dependent upon visibility. In overly simplistic terms, the concept of affordances refers to the possibilities for action when an actor interacts with an artifact (Evans, Pearce, Vitak, & Treem, 2017; Faraj & Azad, 2012). Consideration of the affordances of CMC is attractive for scholars because the concept aims to capture both what individuals can do with CMC tools (i.e., the agency of CMC users), as well as what CMC tools allow people to do with a particular technology (i.e., the constraints of the materiality of CMC) (Leonardi, 2012). In recent years scholars have grappled with the question of whether particular forms of CMC present affordances that are distinct from those present in the use of other communication channels. In reviewing work examining the communicative, social, and technological affordances associated with CMC (including, but not at all limited to, boyd, 2011; Evans et al., 2017; Faraj & Azad, 2012; Gibbs, Rozaidi, & Eisenberg, 2013; Kaptelinin & Nardi, 2012; Treem & Leonardi, 2013; Wellman et al. 2003), it appears that nearly all possibilities for action related to the use of CMC are connected to efforts to make forms of communication more or less visible. To demonstrate this relationship, we can look at how the affordances related to the use of social media in organizations presented by Treem and Leonardi (2013) reveal the central role of visibility. For instance, the editability (or rehearsability) of CMC ensures communication is made visible in a manner consistent with a communicator's intentions. The persistence of CMC makes communication visible over time and available to confront and consume. The association or connectivity afforded through CMC means communicators can make relationships between individuals and content visible to others, and that users may view each other's respective communicative networks. Other scholars have recognized the primacy of visibility relative to other behaviors and actions afforded by CMC. For instance, in reviewing the distinctiveness of instant messaging as a form of CMC Quan-Haase et al. (2005) note that, "the fact that the system creates visibility means that it also creates accountability and a means for monitoring." Similarly, Vaast and Kagener (2013) examined references to different communication affordances in policies around social media in the workplace and found that mentions of persistence were interdependent with, and relevant because of, a recognition of the importance of visibility.

We treat visibility as a root affordance of communication because it serves not merely to grow or amplify the presentation of communication, but also serves to limit, restrict, regulate, vary, and even manipulate communication in various ways. Fundamentally, when individuals are using CMC, the nature and meaning of that use is dependent upon the communication visibility in that context: We make judgements about the value of communication based on whether we feel we were meant to see a message (Walther et al., 2009), and we look at individuals' visible online contributions to learn more about them prior to offline interactions (Gibbs, Ellison, & Lai, 2011). In each case, the value and usefulness of CMC stems from the ability of individuals to utilize its communication visibility to access or provide communication in distinct ways.

The third-party effect

Although scholarship has focused primarily on the communication between direct actors in CMC, the presence and communicative activity of third parties significantly influences the use of CMC to

enact communication processes. For instance, social media users often communicate with an "imagined audience" in mind that may view communication (boyd & Ellison, 2007; Litt, 2012). Research by Sergeeva et al. (2017) refers to the influence that third party actors exert on technology use (such as CMC) as the *onlooker effect*, where *onlookers* are actors who are not directly involved in technology use, but who are "exposed to traces of technology use" (p. 1154) and make inferences about the behavior of those using the technology. The *onlooker effect* then concerns the influence these third-party actors exert on users' behavior through their—either explicit or implicit—presence (and inferences). Onlookers can directly influence user behavior by actively intervening in users' activities, but often their influence is indirect—through users' assumptions and inferences about third party actors' presence and judgments.

Leonardi (2014) offers a view of communication visibility in which the third-party effect plays a key role. Through a field study of the implementation of a new enterprise social networking site in a large financial services organization, he showed that previously invisible communication occurring between people in the organization became visible for third parties to see. Viewing the contents of others' messages helped these third-party observers to make inferences about coworkers' knowledge domains and seeing the structure of coworkers' communication networks helped workers make inferences about those with whom coworkers regularly communicated. Findings showed that this increase in communication visibility helped observers enhance their meta knowledge—knowledge of "who knows what" and "who knows whom" across the organization, which, in turn, led to more innovative products and services and less knowledge duplication as employees learned to work in new ways. Making communication visible to third parties made it possible for workers to learn vicariously by observing others communicate, but only when third parties made the effort to seek out, view, or engage with available communication.

A clear example of this is provided by studies describing how users of enterprise social media adapt their behavior in terms of what they share (and do not share) on platforms because they are aware that their managers are able to see this communication (Gibbs et al., 2013; Oostervink, Agterberg & Huysman, 2016). Communicators make inferences about how these potential third-party audiences will see and judge their communication, and align their actual behavior with these inferred judgments.

The use of CMC by third parties has been found in a variety of contexts including the evaluation of job applicants' online activities (Berkelaar, 2014) and the assessment of individuals' online dating profiles through a process of "social triangulation" (Gibbs et al., 2011). These behaviors are occurring in a context where the ease with which individuals can make communication visible through CMC makes it difficult for third parties to evaluate the credibility of information online (Donath, 2007). Given the ability of actors to manage what and how communication is made visible through CMC, third party observers may seek out additional communicative signals, and increasingly rely on communication not provided by the individual they are evaluating (Walther et al., 2009). The presence of third-parties means that communication visibility should be understood as part of a broader network of CMC in which the possibilities for the visibility of any one actor, message, or interaction are interdependent with the communicative acts of others.

Sociomateriality of CMC

An advantage of the theory of communication visibility we propose is that it takes into account the role of the material features of technologies in making some communication more prominent and accessible than others, while also recognizing that we ascribe differential social and symbolic meanings to the ways in which individuals manage visibility (Orlikowski & Scott, 2008). A consequence of the sociomateriality of CMC is that individuals are implicated in a web of visibility regardless of whether

or not they are actively seeking to manage the visibility of their communication within CMC. Type in someone's name in a search engine, and results will likely appear whether they provided content or not. Theorizing CMC in terms of communication visibility offers us a way to compare practices and purposeful (or accidental) actions and outcomes across both technologies and contexts. Questions related to communication visibility are not bound to any particular platform or time, but are a product of distinct sociomaterial conditions that influence individuals' abilities to make communication more or less visible, and the associated consequences of those acts.

One example of how embracing the sociomaterial nature of communication visibility can alter the study of CMC is in our understanding of impression management. Goffman's (1969) seminal and influential dramaturgical framework of impression management was specifically developed to examine interaction that takes place among co-present individuals. With copresence the visibility of communication is rather straightforward and materially bound to the setting in which the action takes place (e.g., frontstage and backstage). CMC complicates impression management both by making communication potentially visible to far more individuals than those present at the time of an interaction, and by offering individuals ways to materially manipulate communicative performances (Gibbs et al., 2013; Oostervink et al., 2016). Thus, efforts at impression management must be understood as intertwined with the sociomaterial affordances of the CMC technologies used to produce the communication, and the sociomaterial conditions under which performances are viewed (Pinch, 2010).

CMC scholars must move beyond Goffman's dramaturgical metaphor in describing the ways in which individuals approach self-presentation and how observers evaluate the performances of individuals. Treating social interaction as occurring on a particular stage is not as meaningful or instructive when the play has no ending, the theater has no walls, the stage has no boundaries, and the audience is an ever-changing sea of millions of known and unknown accounts, avatars, and automated agents. CMC scholarship needs to broaden its consideration of the different elements—some related to the features of technologies and others related to strategic use of platforms—that influence the ways in which individuals knowingly and unknowingly present communication across mediated contexts.

Accounting for temporality in communication visibility

Temporality is implicated in all three dimensions of communication visibility recognizing that the nature of online communication shifts over time as material is published, deleted, aggregated or obscured, but also in its social meaning as practices become more or less acceptable and the nature of participants changes. In examining communication visibility one can look at single dimension over time and evaluate changes in actors' behaviors, observers' evaluations, or the material state of a CMC context (i.e., how contributions to an online community develop over time). Alternatively, questions of temporality can intersect multiple dimensions and interrogate how different aspects of communication visibility are interrelated or co-evolve. One example of this is research on *context collapse* which explores how the meaning of CMC can change across time as communication becomes potentially visible to new groups of actors (Marwick & boyd, 2010; Vitak, 2012). Temporality is key to communication visibility in CMC in that the prolonged, persistent, and often public availability of communication represents a key distinction from other forms of interaction. This persistence allows for the development and maintenance of communities and a CMC context that can evolve beyond the limits of time and space (Hampton, 2015; Mynatt, O'Day, Adler, & Ito, 1998). Moreover, this persistence can help develop common ground among interaction partners (Gergle, Millen, Kraut, & Fussell, 2004) and make it more difficult for individuals to manage efforts at self-presentation (Vitak & Kim, 2014). Incorporating temporality into questions of communication visibility is critical to evaluating changes or differences in

CMC, which is particularly important given the pace with which new technologies, tools, and platforms evolve.

Recentering CMC scholarship around issues of communication visibility

Though communication visibility has always been relevant to the study of CMC, recognizing the multidimensional nature of the concept offers opportunities to consider how to extend or reimagine communication visibility. For instance, social influence theory (Schmitz & Fulk, 1991) argues that individuals understand the meaning of technologies and make decisions about use based on interactions with and observations of peers. However, this theory is largely based on empirical investigations of organizational settings or contexts in which individuals are being introduced to unfamiliar forms of CMC and views regarding communication visibility are developed through initial use. Recently, scholars have recognized that decisions about the use of technologies at work are complicated by the widespread availability of CMC outside organizations, and that decisions related to communication visibility may operate very differently in work and non-work contexts (Treem et al., 2015). The ubiquity of communication visibility in social life requires us to broaden the potential sources of social influences on CMC use.

Alternatively, the literature on warranting in CMC contexts demonstrates that individuals assess the information contained in communication from third parties on social networking sites as more credible compared to when individuals provide information about themselves (Walther et al., 2009). The reason that warranting theorists give for this finding is that third-party communication is less prone to manipulation—and viewers of communication know it. This is consistent with evidence showing that if a person knows that familiar others may be able to view his or her online material, they are less likely to provide deceptive communication (Toma, Hancock, & Ellison, 2008). DeAndrea (2014) has noted that research is needed to consider the ways individuals assess whether, and how, visible communication is open to manipulation by communicators and the ways in which this shapes communicative and evaluative practices. Put differently, each dimension of communication visibility (i.e., the ease with which one can produce, access, or alter communication online) may influence whether visible communication is seen as credible and trustworthy.

Another example can be found in the application of communication privacy management (CPM) theory (Petronio, 1991, 2002) to CMC settings. CPM provides a framework for understanding why individuals reveal or conceal information with others, and proposes that people develop personal rules and boundaries regarding information disclosure, and when others violate those rules it creates turbulence and uncertainty regarding boundaries. Scholars have extended CPM to a variety of CMC contexts such as blogs (Child, Pearson, & Petronio, 2009) and Facebook (Child & Westermann, 2013), and confirmed that individuals do indeed have clear privacy expectations that can help predict information disclosure behaviors. However, there is also evidence that the third-party effect of contemporary CMC tools may be increasing the amount of boundary turbulence individuals experience, that skill in navigating the features of CMC can help mitigate the likelihood of experiencing privacy violations, and that unwelcome disclosures are often linked to the behaviors of unauthorized third parties (Litt & Hargittai, 2014). These findings indicate that changes in communication visibility in CMC may facilitate a greater divide between individuals' desire for distinct privacy boundaries and the ability to manage visibility in a manner that retains those boundaries.

A theory of communication visibility offers an opportunity to revisit a number of existing frameworks for understanding CMC and ask if they should be extended, adapted, or evolved to better represent fundamental changes in the ways communication can be made visible in CMC, or our

differential abilities to manage that visibility. In an effort to present an agenda for how a theory of communication visibility can provide novel insights into CMC we offer three broad areas of inquiry for ongoing research.

How do we interpret communication that is or is not visible?

A great deal of CMC scholarship has focused on ways that individuals evaluate the credibility of information and messages provided online (DeAndrea, 2014; Flanagin & Metzger, 2007), or how CMC might facilitate deceptive communication practices (Hancock, 2007; Hancock, Toma, & Ellison, 2007). A common approach in this line of research is to examine how individuals assess a particular form of communication in a particular context of CMC use. However, one limitation of this area of work is that it often examines the evaluations of those assessing communication, and the intentions and behaviors of those producing communication as both separate and bound to a single context. This produces knowledge about the ways particular forms of information are viewed as credible or honest, but provides limited insight into the assumptions and perceptions about the visible communication that lead to these judgments.

Centering communication visibility reminds us how many forms of CMC operate as technologies of accountability—meaning that they both create a visible record of use by individuals, and produce communication that individuals are then accountable for in assessments by others (Dourish, 2001; Suchman, 1994). For instance, when an individual—whether a public figure or not—is involved in a newsworthy event, it has become commonplace for the media to examine his or her previous online activity. This practice can surface communication going back years that individuals must now justify, or explain, to others. However, the production and distribution of CMC is no longer limited to those with access to exclusive resources, technical knowledge, or social standing. The ubiquity of CMC tools and the low cost of producing and reproducing information goods, means that individuals can participate in visible CMC—as producers or observers—for little cost (Benkler, 2006). Broadly, this means that talk on CMC is cheap to produce and visibility alone can no longer serve as an effective proxy for effort or ability, thereby necessitating a reconsideration of how individuals evaluate the value of communication.

How do we manage the visibility of our CMC activities and identities?

CMC greatly increases the opportunities individuals have to perform identities across various contexts and to potential audiences (Hogan, 2010). However, this possible visibility poses challenges as individuals are faced with choices regarding how to manage presentations in an environment where communication is increasingly accessible to new groups of individuals who might not otherwise interact (Marwick & boyd, 2010). Yet the expansion of opportunities to make communication more or less visible across contexts is coupled with ambiguity regarding the ways in which CMC is used in conveying different social identities.

An example of this visibility management is demonstrated by Berkelaar's (2014, 2017) research on cybervetting and online self-presentation, which examines how employers use information visible on CMC platforms to make assessments about prospective employees and, in turn, how employees manage online identities with the knowledge that organizations will be seeking and reviewing their activities. She finds that organizations view it as both a right and responsibility to review online information about employees. The strategies prospective employees use to manage identities online are tied directly to how individuals approach the nature of visibility related to online information. For instance, individuals who are worried about online activities being visible will attempt to avoid

any recorded behaviors; individuals who assume that all communication is visible will put little effort into managing their visibility, and others will strategically curate the types of communication that are visible in an attempt to garner a desired perception. Additional empirical research is needed to examine the specific communicative strategies individuals use to convey desired identities in different CMC contexts, why particular strategies proliferate, and how they relate to evaluations of individuals and communicative acts.

How do shifts in socio-material environments alter the meaning and meaningfulness of communicative visibility?

Taking communication visibility seriously means examining the different, and interrelated, social and material influences that shape individuals' abilities to make communication more or less visible in CMC, and third parties' abilities to find, view, and influence communication (Leonardi, 2012; Orlikowski & Scott, 2008). Materially, the features of CMC tools, applications, and platforms enable and constrain different ways of making communication visible, such as the way Snapchat messages are ephemeral (Bayer, Ellison, Schoenebeck, & Falk, 2015). Socially, the meaning of CMC use can shift over time and context along with changes in technological acceptance and social norms. An example of this sociomaterial shift can be seen in the evolution of social networking sites; communication on Friendster, MySpace, LinkedIn, and Facebook has varied significantly in visibility and associated meaning over the past two decades (boyd & Ellison, 2007). As the nature of use of social networks changed over time (i.e., Facebook evolved from a social networking site only available to those affiliated with elite U.S. universities to a publicly available, global environment) the meaning of communicating visibly through these CMC platforms has shifted substantially. Furthermore, as new CMC tools emerge they may cause us to rethink the role and relevance of communication visibility in communication processes. For example, study of the use of Snapchat among college students found that the ephemerality of messages was attractive to those hoping to share contemporaneous experiences with peers (Bayer et al., 2015).

The sociomaterial nature of communication visibility through CMC is also evident in the ways different platforms are used to facilitate organizing and sustain organizations. For instance, scholars have noted that social media contexts and CMC that allow people to manage privacy, facilitate anonymity, and limit access to spaces can serve to support clandestine or hidden organizations (Scott, 2013; Stohl & Stohl, 2011). Moreover, the volume of communication visible across CMC contexts means that individuals and organizations may be able to hide material in plain sight such that communication is accessible, but difficult to sort through, translate, or understand (Flyverborn, Stohl, Stohl, & Leonardi, 2016). As different CMC becomes associated with various user groups and forms of participation, it will be important to take seriously how different platforms operate as legitimate spaces for communication (e.g., Hargittai, 2007).

Future directions for the study of communication visibility on CMC

Accounting for non-visible forms of participation in CMC

The growth and relevance of third parties capable of viewing communication through CMC means researchers must take non-visible forms of participation more seriously. For instance, the vast majority of participants on social media platforms are *lurkers*, who are commonly defined as invisible participants in CMC, people who may read and access what is communicated on a CMC platform but do not visibly contribute to this communication (Cranefield, Yoong & Huff, 2015). Although lurkers are often

conceptualized as inactive or silent participants, even free riders (Kollock & Smith, 1996; Preece, Nonnecke & Andrews, 2004), recent research emphasizes that lurking is contextual (i.e., lurkers in one community may be very active participants in another one), a very frequent activity, and that lurkers actually derive tremendous value from witnessing others' communication (Arnold & Paulus, 2010; Cranefield et al. 2015; Ridings, Gefen & Arinze, 2006). Thus far, however, research has paid little attention to the influence these lurkers, as third-party actors, exert on the communication taking place on CMC platforms. A theory of communication visibility offers a way to broaden our study of CMC to consider technology non-use (i.e., lurkers, private accounts, those who opt out) (Baumer, Burell, Ames, Brubaker, & Dourish, 2015). Given the interdependence of communication visibility within and across contexts it is important to broaden our analysis beyond only active, visible users.

Studying technology non-use may require methods that are uncommon in studies of CMC. Visible communication on CMC is attractive to researchers because it is easily accessible and can be aggregated and analyzed through a variety of software tools. However, it is important for scholars to pursue data regarding a broader scope of CMC participation including information regarding what communicators view or access without actively contributing or interacting with one another. Additionally, observational research of CMC use can help document the ways in which individuals edit, revise, and self-censor communication before making decisions regarding what to make visible to others. Additionally, scholars observing CMC activity can examine how individuals seek out and utilize visible information prior to engaging in interactions. These research methods will broaden the set of actors and behaviors examined in CMC scholarship

Seeking disjunctures that trigger questions of visibility

Given the scope and ubiquity of CMC it may be difficult for researchers to find appropriate contexts and entry points for research. One avenue is to look for opportunities where the visibility of communication through CMC might be disrupted, altered, or shifted. This could come from changes in the material features of technologies, such as the privacy settings of social networking sites (e.g., Debatin, Lovejoy, Horn, & Hughes, 2009). Alternatively, potential changes in visibility could emerge from ways that users appropriate and alter different CMC tools, like the ways Twitter users adopted the @ symbol to facilitate conversations (Honeycutt & Herring, 2009). Another possible opportunity for research on communication visibility is when organizations make policy changes regarding the use of CMC that makes communication more or less visible for members. For example, Leonardi and Treem (2012) examined how an organization altered the use of a knowledge management tool in a manner that made previously private information visible among coworkers, and found that this shift triggered strategic sharing of communication among group members. Seeking potential disruptions in the communication visibility of CMC is one way researchers can identify contexts for study beyond focusing on a specific technology or platform.

Looking at communication visibility as a multimodal construct

CMC scholars have long recognized that individuals often use multiple forms of communication sequentially, simultaneously, and complementarily in pursuit of communicative goals (Reinsch Jr., Turner, & Tinsley, 2008; Stephens et al., 2008). However, researchers tend to confine studies to communication on a single CMC platform or context, making it difficult to develop more generalizable theory and leading to empirical findings that are quickly outdated when technologies shift (Baym, 2009). For example, a significant majority of studies of social networking sites limit their analysis to use of Facebook (Rains & Brunner, 2014). Scholars should look at a broader range of strategies and spaces

used to make CMC visible, and how individuals view the interactions and interdependence among these spaces.

Conclusion

We propose that scholarship has not sufficiently focused on the multidimensional relationship between CMC and the visibility of communicative practices and content. CMC scholarship needs to grapple with a fundamental paradox that has emerged: People can make communication more visible in more ways than in any time in history, yet they have far less control over how (and by whom) that communication is viewed. It is not surprising, then, that much of the scholarship on how CMC alters communication visibility characterizes the various contradictions, tensions, conflicts, and complexity present (Gibbs et al., 2013; Hardimos, 1997; Oostervink et al., 2016). We believe that the paradoxes inherent in the communication visibility of CMC are a feature, not a bug, and we encourage scholars to engage more deeply and directly with the issues surrounding this construct. The multidimensional framework we have provided in this article should help scholars begin studying these important questions in ways that will improve our theorizing about the role of CMC in this emerging age of communication visibility.

Note

1 The three-dimensional model used here is inspired by the three-dimensional model of expertise found in Collins (2011).

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