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Explicating Affordances: A Conceptual Framework for Understanding Affordances in Communication Research

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This study aims to clarify inconsistencies regarding the term affordances *by examining how affordances terminology is used in empirical research on communication and technology. Through an analysis of 82 communication-oriented scholarly works on affordances, we identify 3 inconsistencies regarding the use of this term. First, much research describes a particular affordance without engaging other scholarship addressing that affordance. Second, several studies identify "lists" of affordances without conceptually developing individual affordances within those lists. Third, the affordances perspective is evoked in situations where the purported affordance does not meet commonly accepted definitions. We conclude with a set of criteria to aid scholars in evaluating their assumptions about affordances and to facilitate a more consistent approach to its conceptualization and application.*

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Published communication research on affordances has increased in recent years. An affordances perspective represents a relational approach to understanding how people interact with technology (Leonardi, 2013). This study examines how affordances terminology is used in communication

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research, particularly in recent empirical research on the use of communication technologies. Through an examination of 82 scholarly works, including articles in 11 leading communication journals and a convenience sample of highly cited studies published in other journals, we identify three major inconsistencies regarding the use of affordances. Such inconsistencies make it difficult for scholars to build upon previous research and contribute to theory more broadly.

First, we find that much research describes a particular affordance without engaging other scholarship addressing the same affordance. Sometimes these studies discuss the same ideas while using completely different terminology. Second, some articles identify "lists" of affordances without conceptually defining individual affordances. These lists often exist at a micro- or context-dependent level, making theory-building more challenging. Third, the affordances perspective is evoked in situations where the supposed affordance does not meet commonly accepted definitions of an affordance. For example, some research describes phenomena that more closely reflect a *feature* of a technology (e.g., filtering) or an *outcome* of an affordance (e.g., community building).

While the exploration and identification of affordances can be valuable, better clarity of meaning (McLeod & Pan, 2005) about the concept is needed so researchers can better coordinate how affordances are conceptualized and studied, and can build upon previous findings. We argue that affordances research should facilitate theory building and empirical research at multiple levels of analysis and across contexts of communication technology usage. In this study, we address the research questions: (1) How is the concept of affordances being used in communication technology scholarship? (2) What are the strengths and limitations of this scholarship? And, (3) what is the minimum set of criteria necessary for assessing the conceptual validity of an supposed affordance?

The diverse ways scholars apply the term *affordances* across fields demonstrate rich discourse within this line of research. However, there is also value in taking a step back to assess strengths and weaknesses of the usage of *affordances* in order to reach some degree of consistency in how the term is being used. This can better enable scholars to build theory by working from a shared foundation for affordances discourse, without limiting critiques or alternative approaches. In particular, this examination is important when considering the relevance of *affordances* for theory development regarding the use and perceptions of communication technologies. This explicit concern differs from other areas in which *affordances* is popular, such as ecological psychology's focus on how animals evolved to perceive their environment in particular ways, or how designers manipulate material features of technologies to encourage particular perceptions of artifacts. Instead, in this article we are interested in capturing a relational view of how the meaning of technology use is influenced by the affordances of a communication technology in a particular setting.

Our conceptual definition of affordances—broadly described as possibilities for action—is the "multifaceted relational structure" (Faraj & Azad, 2012, p. 254) between an object/technology and the user that enables or constrains potential behavioral outcomes in a particular context. This relational view helps explain why there is no singular theory of affordances, as they emerge in the mutuality between those using technologies, the material features of those technologies, and the situated nature of use. As Hutchby (2001) noted, "Affordances are functional and relational aspects, which frame, while not determining, the possibilities for agentic action in relation to an object" (p. 444). Because the attributes and abilities of users, the materiality of technologies, and the contexts of technology use are all potentially dynamic, the concept of affordances provides a framework to probe these relationships in different ways while retaining a relational ontology (and not privileging any one aspect as deterministic of the others).

To help explicate the concept of affordances, and make it useful for researchers to apply, explore, and build upon, we ultimately present a set of criteria that can be used to determine whether a particular examples meets the minimum threshold criteria to qualify as an affordance; specifically, the three

criteria determine if the supposed affordance (1) is itself presented as a feature of a technology, (2) is itself presented as an outcome of technology use, and (3) if the purported relationship has variability.

In the following sections, we first describe affordances and show how the term has gained popularly in communication research. Second, we present a set of criteria to aid scholars in examining their assumptions about affordances and to facilitate a more consistent approach to conceptualization and application of affordances.

The Use of Affordances in Communication Research

The term affordances was first coined by Gibson (1979), who intended an *affordance* to mean an action possibility available in the environment. To Gibson, an affordance exists relative to the action capabilities of an actor. An affordance does not change if the actor's needs and/or goals change. The affordances perspective was popularized in design and human-computer interaction research by Norman (1988), who defined affordances as the design aspect of an object. This definition argues that the nature of an object informs how it should be used. However, subsequent scholarship argued that affordances can emerge through direct interaction with technologies, which often leads to processes of experimentation and adaptation that shape the actions people take with technologies (Gaver, 1991; Leonardi, 2011). When taken together, these two views are consistent with a relational view of affordances in that the materiality of technology influences, but does not determine, the possibilities for users. Thus the concept of affordances is attractive for communication researchers because it suggests that neither materiality (e.g., an object) nor a constructivist view (e.g., human agency) are sufficient to explain technology use (Leonardi & Barley, 2008), and advocates focusing on relational actions that occur among people and technologies (Faraj & Azad, 2012). In this way, theorizing about affordances functions as a type of middle-range theorizing (Merton, 1967) that can bridge observations about technology use with our broader understanding of technology at individual, group, and organizational levels.

That said, we do not consider an "affordances theory," as it does not meet the requirements of a theory (Craig, 2013; Sutton & Staw, 1995); rather, affordances are better considered as a process concept, depicting specific ways things vary (McLeod & Pan, 2005). Concepts need *explication*—i.e., the process of bringing meaning to and providing linkages between commonly used concepts and terms and their operationalizations—as part of the work of theorizing (Chaffee, 1991; McLeod & Pan, 2005; Merton, 1958). Although we do not propose an operational definition for the concept of affordances, we do focus on conceptual clarification to facilitate future theoretical and empirical research.

One step in explication is determining how the concept has been defined in the past and analyzing the meaning of a concept (Chaffee, 1991). This is particularly challenging with affordances because the original definition was ambiguous, leading to widely varying uses of the term (Mcgrenere & Ho, 2000), an issue that still plagues scholarship in several disciplines (Faraj & Azad, 2012; Parchoma, 2014). Within the sample of articles we evaluate, a majority cited a Gibsonian definition of *affordances*, yet there was little consistency in the application of the term among these papers. Likewise, facets of communication research touch upon affordances in different ways, such as media effects research that positions some independent variables connected to new media (e.g., interactivity and navigability) as affordances (Sundar, 2009). In fact, there is no agreement on a conceptual definition of affordances, which has led to questions about the concept's "analytical integrity" (Parchoma, 2014) or "analytical value" (Oliver, 2005).

To identify how affordances research is applied in communication scholarship, a search was conducted for academic journal articles using the term "affordances" in the article abstracts (English-only) for all years available (1985–2015)[1], yielding 2,349 academic journal articles. The most prominent fields[2] represented in this search were psychology, communication, human-computer interaction,

sociology, linguistics, education, and child development. Appendix A provides an overview of the prominence of affordances specifically in communication and communication-related journal articles. These 11 journals provide an overview of emergent trends in affordances research in the communication discipline. These trends included the prevalence of media and technology research, organizational communication research, and the popularity of the term in publications focused on new media and communication.

These data illustrate where scholarly conversations about affordances are occurring. While research on affordances has become popular in certain disciplines, this popularity may be misleading because authors use the term in different ways and contexts. Thus, investigating *where* and *how* the term is being used increases the analytical integrity or value of an affordances approach. To better understand how *affordances* is used in communication technology scholarship, we conducted a document analysis (Bowen, 2009) of a sample of articles from social science journals that refer to affordances. First, we narrowed the population to a list of 11 journals that include communication-oriented terms in their titles and/or are generally viewed as central to the discipline. We then searched the selected journals' archives for all articles including *affordances* in the title, keywords, abstract, or text, identifying 188 that met these broad criteria. We examined this list of articles for those that described types of affordances in depth and removed more than half because affordances were not a primary focus. We further complemented the sample by adding several highly cited articles and book chapters that address communication affordances but were not published in one of the 11 journals (e.g., Treem & Leonardi, 2012, published in *Communication Yearbook*). This process resulted in a final sample of 82 articles (list available from the authors). We chose to mix systematic and convenience sampling in order to balance works from journals that publish more in this space, along with influential articles that may appear in outlets that publish in this area less often.

In addition to the bird's-eye view of where communication research on affordances has been published, the authors also analyzed the 82 articles to assess the technology, object, or entity of focus and the proposed affordance(s) mentioned. They recorded the conceptual definition of the affordance provided in the article, as well as the primary theorist(s) cited. They then grouped proposed affordances according to their similarities. The first three authors conducted this process inductively and independently, resulting in three lists that varied in depth and breadth of category. The authors compiled the full list of 44 categories (listed by at least one author) and, through an iterative process of multiple discussions regarding the distinctiveness of categories, reduced the list to 23 primary categories of proposed affordances. Many reductions stemmed from authors' discussions on how to bound and define an affordance, with the goal of establishing maximum clarity within categories and maximum difference between categories. For example, authors discussed *interactivity* through a number of terms, including commenting, metavoicing, feedback, and engagement; while initially coded as multiple categories, they were condensed to a single category (interactivity) in the final list. Categorization concluded only when consensus was established for all of the reviewed affordances.

This process revealed some strengths and weaknesses of affordances scholarship. While research points to the existence of some affordances categories, there was variance in how Gibson's original work was translated, creating significant inconsistencies in use of the term. For example, clusters of articles from the sample addressed categories ranging from commenting to visibility to communication generally. These inconsistencies in the use of affordances make it challenging for scholars to avoid talking past one another due to different foundational conceptualizations of affordances, and to build on previous work.

Based on the definitions used for the different affordances categories across articles in the sample, the authors categorized each affordance as either (1) meeting the conceptual criteria of an affordance,

(2) an outcome, (3) a feature, or (4) undefined/unsure. Through this process, we developed a conceptual model for understanding the position of affordances in a communication research context, and we propose series of guidelines for categorizing a purported affordance as an affordance, outcome, or feature. We argue that these criteria represent a minimum threshold for clarifying affordances, and provide researchers with a clear foundation from which to conduct affordances research.

Threshold Criteria for Substantiating Purported Affordances

Threshold criteria provide a straightforward method for researchers to conceptualize and apply affordances in their research. For instance, while many authors cite Gibson's definition, application of his conceptualization is inconsistent. First, an affordance must not come from more colloquial use of the verb "to afford" that does not engage with the larger affordances perspective (e.g., a methods section that says "the authors afforded participants anonymity").

Second, specifying the basic relationships between an object and user can provide researchers with a more consistent conceptual model for applying affordances. We advocate for conceptually defining communication affordances in terms of the multidimensional relationship between the object or technology and the user, and how that relationship offers possible (and actual) outcomes (i.e., what emerges from the user's interactions with the object). In reviewing how studies apply an affordances perspective, one of the primary inconsistencies was not in definitions of affordances, but whether the authors created a link between object and outcome through an affordance. Instead, research invoking affordances often looks at one dimension of the dyadic relationships between users and technologies: either what people think they can do with technologies (i.e., perceptions of usefulness) or how people use technologies (i.e., feature use; see Sundar and Bellur (2011) for discussion). Understanding the multidimensionality of affordances is critical because the relational aspect of affordances needs to account for the potential for mutual influence, and should not be viewed as existing in (or provided by) either side of the relationship alone (Gibson, 1979). Additionally, it is critical to recognize the role of affordances in mediating the object-outcome link, as ignoring this aspect of affordances reflects a theoretical leap and implies a deterministic argument where an object leads to the outcome without any indication of the process or reasons for the relationship. To exhibit this analytical stance in practice, we propose the following criteria to assess a proposed affordance.

Criteria #1: Confirm Proposed Affordance is Neither the Object Nor a Feature of the Object

Because scholars often utilize an affordances perspective to explicitly analyze the role of communication technologies in a social setting, it is tempting to apply a technology-specific feature orientation rather than the connection between objects—in coordination with human goals—and outcomes. This is often implied, and encouraged, by language that talks about the affordances *of* or *offered by* specific technologies (Gaver, 1991) and positions the affordance as inherent in use based on some material aspect of the technology. However, it is important to recognize the agency present in technology use; the relationship between person and object means that "affordances neither belong to the environment nor the individual, but rather to the relationship between individuals and their perceptions of environments" (Parchoma, 2014, p. 361). Previous research has defined features as "what users can do with a technology" (Markus & Silver, 2008, p. 612), as a tool or attribute "that enables activity on the part of the user" (Smock, Ellison, Lampe, & Wohn, 2011, p. 2323), and as *structural features*, or design elements that offer "specific types of rules and resources, or capabilities, offered by the system" (DeSanctis & Poole, 1994. p. 126). For example, a smartphone's built-in camera is a feature, while an affordance is recordability (i.e., the ability to capture images or video of a person, place, or thing), and an outcome could be the documenting of

human rights violations. Treem and Leonardi (2012) further distinguish features from affordances by noting that features are static while affordances are dynamic, emerging from the relationship between the user, the object, and its features. In this way, individuals agree on common features of an object such as a table (e.g., number of legs) but may disagree about its affordances (e.g., eating, storing, or hiding).

Criteria #2: Confirm the Proposed Affordance is Not an Outcome

Affordances invite behaviors and other outcomes (Withagen, de Poel, Araújo, & Pepping, 2012) but are not the outcome itself. An outcome need not be an action (Michaels, 2003) but needs to be connected with the goals of the actor (Gibson, 1979). For example, if an actor's social media goal is locating a photograph of a new neighbor, one might argue that social media affords viewing profile pictures of individuals. However, we argue that social media affords increased visibility and searchability of content, which leads to locating photographs. Put differently, visibility and searchability make possible actions related to the finding, confronting, viewing, and consuming content – when these affordances are not present content is either unavailable or obscured to the user. In this example, locating a photograph is the goal or outcome, whereas visibility and searchability reflect the means through which the actor can potentially attain her goal. Visibility and searchability are not features tied to one object, nor are they outcomes; rather, they reflect the relational link among the object, user, and outcome.

For this criterion, scholars should also assess whether an affordance can be associated with *multiple* outcomes. This is in keeping with the Gibsonian idea that an affordance should remain relatively constant—even if an actor's goals change. In the above example, visibility is not tied solely to locating photographs, but may be associated with a range of outcomes, such as viewing an individual's social network or monitoring the activities of others. Therefore, individuals can be associated with the same affordance while differing in both their goals and outcomes. Thus, the presence of an affordance does not determine consequences in social situations. This explains findings from research on organizational use of social media that show that the same affordance can be connected to contradictory social outcomes (Gibbs, Rozaidi, & Eisenberg, 2013; Majchrzak, Faraj, Kane, & Azad, 2013).

Criteria #3: Confirm the Proposed Affordance has Variability

In quantitative research, variability implies the degree of dispersion of a variable (Blaikie, 2003); we use variability to describe how an affordance has *range*. For example, visibility can be assessed in terms of greater or lesser visibility or the relative degree of visibility (Leonardi, 2014). We argue that a potential strength of affordances is that, unlike features, they are not binary; rather, there are gradations of affordances. This argument has methodological implications for future statistical analyses about perceptions of affordances; for example, scales could be developed to address how individuals perceive the variability of specific affordances.

The variability of affordances is evident in empirical work demonstrating contradictory behaviors of individuals using the same features to achieve different outcomes. In a study looking at how workers in a technology organization used social communication technologies, Gibbs et al. (2013) found that the same technology afforded different levels of visibility, and this influenced behaviors in relation to when they were available to colleagues, their engagement in communication, and their forms of knowledge sharing. Similarly, Majchrzak et al. (2013) identified four affordances associated with social media (metavoicing, triggered attending, networked-informed associating, and generative role-taking) and noted that each could facilitate or hinder knowledge sharing in online communities. Mcgrenere and Ho (2000) noted that affordances can vary in the ease with which they are engaged with or undertaken, and that this can be influenced by the materiality of a technology or the capabilities of the user. Thus, understanding that affordances have variability is necessary to retain the underlying principle that

affordances are a relational construct that sit in between — but do not determine — objects and outcomes. Appendix B summarizes these three criteria.

Application of the Affordances Threshold Criteria

In this section, we illustrate how the Affordances Threshold Criteria can be applied to a range of concepts from the aforementioned sample of articles. This process provides a minimum set of criteria that can be used by researchers in a range of academic subdisciplines. We selected topics to test examples of proposed affordances that fall into each of the categories: affordance, outcome, or feature. These topics came from the list of the 23 affordances categories identified by the authors to illustrate both clear and more ambiguous examples for this type of evaluation. To select these exemplars and demonstrate the scope of these criteria, we identified terms that were categorized similarly by all authors, including terms commonly identified as affordances, and terms occasionally identified as affordances but ill-fitting with existing definitions. We do not argue that these affordances are the most prominent or frequently present, only that they are helpful in illustrating the process.

Topics that Meet the Threshold Criteria

Anonymity

Anonymity is "the degree to which a communicator perceives the message source is unknown and unspecified" (Scott, 1998, p. 387); many authors claim it is an affordance (e.g., Fox & Potocki, 2014; Halpern & Gibbs, 2013; Hopkins, 2015).

Is anonymity a feature of the object itself? Anonymity cannot be considered a feature or object by itself. For example, Halpern and Gibbs (2013) describe the "level of identifiability vs. anonymity" as an affordance of social media, not as a property of an object (p. 1160).

Is anonymity an outcome? Anonymity is not an outcome of an object; rather, anonymity leads to a variety of outcomes; for example, Fox and Warber's (2015) study of LGBT individuals on Facebook found a lack of anonymity silenced individuals who perceived a heteronormative majority on the site.

Does anonymity vary? There is great variability in the degree of anonymity that particular objects afford. In fact "anonymity must be viewed on a continuum from fully anonymous to full identified" (Scott, 1998, p. 387) and includes full, partial, and fully identified options (Scott, 1998). To illustrate, consider that *sometimes* communication technologies afford anonymity while others afford pseudonymity. This is particular to platforms that do not require identity verification, like Twitter or Tumblr; for instance, technology can be used to "anonymize" a sext by cropping out someone's face (Fox & Potocki, 2014). Yet, *sometimes* communication technologies do not afford anonymity, particularly because of digital traces. Hopkins (2015) notes that most Internet users can be traced; thus, anonymity is merely ostensible. Other platforms encourage or require use of "real names." Technical features may also afford a lack of true anonymity, such as smartphone apps connected to a user's phone number or data aggregation making individuals more identifiable (Fox & Potocki, 2014).

Outcome of evaluation: As anonymity is not the object or a feature, or an outcome, but does vary, we argue it is an affordance.

Persistence

Persistence can be thought of as durability: "Communication is persistent if it remains accessible in the same form as the original display after the actor has finished his or her presentation" (Treem & Leonardi, 2012, p. 18). Scholars have associated persistence with terms such as recordability (Ellison,

Gibbs, & Weber, 2015; Tokunaga, 2011) and archivability (Ellison et al., 2015; Tokunaga, 2011). Persistence has been used in coordination with clear linkages to previous research on affordances, going back as far as Mynatt, O'Day, Adler, & Ito (1998). While it is possible to use persistence in contexts other than affordances, research has linked persistence as a type of affordance to technologies and potential outcomes.

Is persistence a feature of the object itself? Persistence is not solely affiliated with a specific platform or specific features of a platform. Treem and Leonardi (2012) described e-mail as an example of this, noting that a user can save and store messages (an outcome). Though there may be a bias toward communication technologies, scholars refer to different types of objects or platforms when writing about persistence, including general SNSs like Facebook (Tokunaga, 2011); enterprise SNSs, e-mail, and wikis (Treem & Leonardi, 2012); and pictures and other content on Facebook (Fox & Moreland, 2015). Thus, the notion of persistence can apply to a range of objects.

Is persistence an outcome? Persistence leads to different outcomes. In research, there has been a relatively consistent use of the *object → persistence → outcome* (behavioral) pattern. Mynatt et al. (1998) describe how online spaces have a quality of persistence that "support a wide range of user interaction and collaborative activity" (p. 124). Treem and Leonardi (2012) note that persistence can lead to outcomes such as "sustaining knowledge over time, creating robust forms of communication, and growing content" (p. 20). In the context of enterprise social network sites, Ellison et al. (2015) discuss possible outcomes for persistence such as a "more selective self-presentation" (p. 111) or a message that gets (mis)judged by organizational members after the passage of time (p. 116). Vitak and Kim (2014) argue that persistence of content on Facebook leads some users to treat the site as a form of "digital diary." Thus, the notion of persistence has been portrayed as something that can lead to many types of outcomes.

Does persistence vary? Whereas persistence is most commonly invoked in situations where content is archived or otherwise maintained, we can also think of communication technologies as having varying levels of persistence, often operationalized as duration of time. For example, Mynatt et al. (1998) argued that networked communications "are durable across time, users and particular uses, providing an ambient and continuous context for activity" (p. 130). At the other extreme, social media like Snapchat and YikYak appeal to many because of the ephemeral nature of interactions (Bayer, Ellison, Schoenebeck, & Falk, 2016). Some research has treated persistence as a binary variable; for example, Albu and Etter (2016) refer to Twitter in that tweets "can be accessed in the same form as their original display any time after their creation" (p. 5), yet tweets can be deleted—which points to degrees of persistence.

Outcome of evaluation: As persistence is not the object or a feature, nor an outcome, but does vary, we argue that it is an affordance.

Visibility

Visibility refers to whether a piece of information can be located, as well as the relative ease with which it can be located (Treem & Leonardi, 2012). This presumed affordance is more than just the colloquial definition of "being visible or seen" because it also encompasses the level of difficulty associated with finding a piece of information. Communication technologies have impacted the visibility of information with databases and search tools making information more visible to the end user. Leonardi (2014) notes that new communication tools increase visibility "by loosening the requirement to select a target audience through email carbon copy features or the instant messaging forward feature. Instead, the sender can create a public communication platform that can be accessed by team members" (p. 797). Visibility extends beyond organizational settings—where information visibility is critical to the bottom line—to social technologies, where information visibility may assist users in making and maintaining connections and sharing information with their networks. Visibility is one of the most popular presumed

affordances, particularly regarding social media sites (Albu & Etter, 2016; Fox & Moreland, 2015; Fox & Warber, 2013; Pearce, in press; Vitak & Kim, 2014).

Is visibility a feature of the object itself? Social media make information more visible through features that aggregate content posted by users and their networks (e.g., Facebook's "About Me" section on user profiles). Search features make it easier to locate information; in this way, social media increase the visibility or "findability" of information compared to other data storages processes. For example, if one spills coffee on her rolodex, she might lose valuable contact information because it becomes illegible. While still technically possible, such data corruption is less likely when information is digital. Visibility applies to any online technology that includes features to search for and find information.

Is visibility an outcome? Visibility is most closely coupled to outcomes around information seeking and sharing. Borgatti and Cross (2003) note that access to information—both knowing and being able to communicate with the source of information—is a key factor influencing the success of information seeking. If information is invisible or otherwise hard to locate, a task will take significantly more time to achieve. Likewise, visibility of information has been shown to reduce transaction costs such as the time and effort required to locate a piece of information (Coiera, 2000), to help individuals establish common ground (Lampe, Ellison, & Steinfield, 2007), and to maintain relationships (Vitak, 2014).

Information visibility is often studied in organizational contexts, where institutional knowledge may be difficult to access, especially for newer employees, and where informational exchanges often depend on knowing of whom to ask questions. For example, Leonardi (2014) notes that two aspects of communication visibility within enterprise social network platforms—message transparency and network translucence—increase employees' awareness of "who knows what and whom." In general, enterprise SNSs increase the visibility of task and social information about employees to the wider company network, allowing employees to get to know coworkers, seek collaborators, or position themselves for advancement (DiMicco et al., 2008).

Does visibility vary? The amount of visibility of content is dependent on a site's specific features, as well as the end user's application of specific features. For example, many social media platforms contain search features that are similar to more traditional search engines; if, however, a user changed her privacy settings to keep her profile out of site-based searches, her information would be less visible than another user who has not applied the same settings. Profile features on social media platforms also afford high visibility; however, different sites place varying levels of emphasis on the quantity and quality of "About Me"-type information. LinkedIn, for example, prominently summarizes the most pertinent user information at the top of each profile while on Twitter, the "About Me" text is limited to 140 characters; although highly visible on the profile page, users are constrained in the quantity of information they can share through that feature.

Outcome of evaluation: As visibility is not the object or a feature, and is not an outcome, but does vary, we argue it is an affordance.

Concepts That Fail to Meet the Threshold Criteria

Privacy

Privacy has been defined through many lenses over the years, from "the right to be left alone" to "selective control of access to the self" (Altman, 1975). Such conceptualizations suggest that privacy is temporary and is an outcome that people work to achieve. Online, some platforms afford privacy generally (Utz, Muscanell, & Khalid, 2015), although norms around information disclosure on social media has trended toward public sharing with minimal privacy. Other researchers have attempted to unpack privacy as an affordance, framing social media as affording "information control" (Kuo, Tseng, Tseng, & Lin, 2013)

or "privacy customization" (Fox & Warber, 2015). However, social media also afford "privacy problems" (Trepte, 2015) and the "illusion of privacy" (Pearce, in press).

Is privacy a feature of the object itself? Achieving privacy requires a specific set of behaviors by the individual. Most social media platforms contain privacy-enhancing features (e.g., privacy settings) that provide control over access to posted content (Litt, 2013). This is aligned with communication research that has demonstrated how individuals actively manage privacy through revealing and concealing information, a process represented in communication privacy management theory (Petronio, 2002).

Is privacy an outcome? Privacy and information control have been presented as an affordance rather than an outcome in CMC research. For example, Kuo et al. (2013) argue that social media features afford three types of information control (expressive, privacy, and image) and that these affordances facilitate self-presentation (the proposed outcome); however, the operationalizations of these factors frame them as the relationship between a set of features and a set of outcomes (e.g., "With the assistance of these features, I can avoid topics that I don't want to discuss"). Likewise, Fox and Warber (2015) argue that Facebook affords privacy customization; in reality, privacy customization is the outcome in the study, and privacy settings are the feature. Fox and Warber's study offers an example of researchers "leapfrogging" affordances in the chain of events (object → affordance → outcome).

Does privacy vary? Privacy varies significantly depending on the technical features of a given medium, the knowledge and skills of a user to employ those features, and the individual's attitudes toward restricting access to some or all content. Research highlights that users have varying privacy concerns and engage in a variety of strategies to achieve privacy (Litt, 2013; Vitak & Kim, 2014). A desire for privacy is far from universal. Many users instead try to share content with as large an audience as possible to achieve information diffusion.

Outcome of evaluation: As privacy is not a feature, but is an outcome, and it does vary, we argue it is not an affordance; rather, it is an outcome resulting from affordances such as visibility or editability.

Collaboration

Collaboration is a concept that can be viewed as a gray area because it is such a common and amorphous term; however, we argue that in general, collaboration, does not meet the threshold criteria. Collaboration is "a process through which parties who see different aspects of a problem can constructively explore their differences and search for solutions that go beyond their own limited vision of what is possible" (Gray, 1979, p. 5 in Gray & Wood, 1991a). Collaboration implies direct communication among actors (as opposed to coordination, which is concerned with the organization of resources). Previous research on affordances has framed collaboration as an outcome connected to other affordances. For example, Gaver (1992) denoted that use of media technologies may or may not afford vision, listening, and movement—which, in combination, lead to collaboration. Zammuto, Griffith, Majchrzak, Dougherty, and Faraj (2007) argue that *virtual collaboration* ("the ability to share and integrate others' knowledge when that knowledge is primarily conveyed through virtual media," p. 755) and *mass collaboration* ("the process by which people interact on a many-to-many basis via the Internet as opposed to a one-to-one basis (e.g., instant messaging), or a one-to-many basis (e.g., list servers)," p. 756) constitute affordances in relation to technology use in organizations. The authors focus on distinct collaborative processes that lead to collaboration in a broader sense, such as "broaden[ing] participation in an organization's work processes … by including people located on the periphery" (p. 756). Gibbs et al. (2013) examine enterprise social media as collaborative tools (a general quality or feature of the tools) that afford dialectical tensions (visibility-invisibility, engagement-disengagement, sharing-control) and that lead to potential outcomes like knowledge sharing. These examples center on the theme of collaboration but do not position collaboration itself as an affordance.

Is collaboration a feature of the object itself? Collaboration is not depicted as a feature of a particular technology, but rather as something that relates to possible or actualized behaviors such as how IT infrastructure leads to virtual collaboration in organizational settings (Zammuto et al., 2007), or the use of social media tools for collaboration (DiMicco et al., 2008; Gibbs et al., 2013). Similarly, Gaver (1992) discusses a number of specific features of cameras, microphones, and video, but never claims that the presence or use of these features themselves constitutes collaboration, or ensures it will or will not take place. Rather, collaboration as an affordance references the actions of individuals working together in an interdependent manner. As such, collaboration is not determined by the mere presence of an object or feature that allows individuals to be in, or access, a shared space. Collaboration is a relational action, not a feature.

Is collaboration an outcome? Collaboration can be viewed as an outcome if the goals of an actor are centered on collaboration (see Peterson & Miller, 2004), although we acknowledge that collaboration is also often thought of as leading to outcomes (see Gray & Wood, 1991b). Collaboration can therefore be an outcome in and of itself, or something that leads to subsequent outcomes based on the nature of the collaboration that takes place. The definition of such an affordance can be problematic, however. For example, Zammuto et al. (2007) frame virtual collaboration as something that affords knowledge sharing or other knowledge-driven goals.

Does collaboration vary? Because collaboration involves the efforts and resources of multiple actors, it varies in terms of individuals' willingness to take part in collaborative actions. For instance, in discussing virtual collaboration, Zammuto et al. (2007) note that processes may vary for a number of reasons, such as individuals not sharing knowledge with others or the presence of group conflict. This example demonstrates that variability in collaboration is influenced *by*, but distinct *from,* the features of the technology and the outcome of the collaborative effort. As Gaver (1992) noted in comparing technologically mediated collaboration with face-to-face: "saying that media spaces have different affordances than the everyday medium does not imply that collaboration is always 'worse' in media spaces, merely that it is different" (p. 23). That collaboration is an action possibility does not mean that collaboration will garner a particular level of action, nor produce a particular outcome.

Outcome of evaluation: As collaboration is not the object or a feature, but it can be viewed as an outcome, and does vary, we argue that in most cases it is not an affordance. Instead, we view collaboration as an outcome resulting from communication affordances.

Features of an object: An additional example of failure to meet the threshold criteria

As the above discussion notes, it can be difficult to distinguish between a feature and an affordance; however, we argue that the distinction is important in order to avoid a stance that sees affordances as *embodied* in technologies. One example of a feature that has also been treated as an affordance is triggered alerts/notifications. Majchrzak et al. (2013) discuss how social media technologies can provide users with alerts informing them of changes in content. We argue that the alerts themselves are a feature of social media; they are built into the technology and do not exist outside the technology. Conversely, Gibbs et al. (2013) discuss the use of alerts in social media technologies, but describe how they relate to the affordance of engagement with others. The relevant action possibility is not whether the alerts exist or not, but whether individuals can increase or decrease engagement with social media. In turn, the variability in engagement is not an outcome itself, but can influence a number of different outcomes. Focusing on the affordance of engagement and not the feature of triggered alerts allows us to make comparisons across situations where the use of technology is associated with engagement, regardless of whether specific alert features are present. Therefore, triggered alerts/notifications fail to pass the first criterion and thus should not be considered an affordance. Other examples of topics that relate more

closely to features of an object include geotagging (Cochrane & Bateman, 2010) and portability (Fox & Potocki, 2014; Schrock, 2015).

Discussion and Conclusion

By examining the proliferation of affordances research and the emergent strengths and weaknesses of this literature, we developed a set of minimum threshold criteria as a practical, theory-based tool for researchers to evaluate potential affordances. In this article, we have argued that using an affordances perspective will be more valuable and informative if researchers approach the topic in a more systematized way. As we have discussed, the creative adaptation of affordances is positive for research, but the ambiguous use of the term also needs to be addressed in order for scholars to build theory. In his critique of affordances research, Oliver (2005) notes, "Does it matter, however, if the term is used inconsistently, if it is productive? Arguably, yes. For researchers, incoherence in terminology will provide a false impression of research coherence, hiding (not resolving) problems" (p. 411). This problem is complicated by scholars' reliance on a few key sources to define affordances (i.e., Gibson, 1979; Hutchby, 2001; Norman, 1988; and more recently, Treem & Leonardi, 2012). As scholars, we do not want to lock ourselves into a few chosen definitions or lists of affordances, particularly early definitions that require adaptation to fit different research contexts.

Furthermore, the proliferation of list-based articles that seek to identify a set of affordances specific to a platform or channel represents a major source of confusion between "true" affordances, features of a site, and outcomes of an affordance. New communication technologies may offer new affordances and new possibilities for action by individuals. However, narrowly identifying or simply listing purported affordances associated with a technology provides limited theoretical value and confines the contribution of work to a restrictive empirical space. Instead, we urge scholars to explore a wider breadth of questions that cut across features and outcomes.

Additionally, recognizing the multidimensionality and relational nature of affordances can also help researchers balance concerns with both potential social and material influences on technology use and recognize the presence of deterministic logic. Importantly, we are not denying the value of research focused centrally on the use of particular features of a technologies or testing whether technologies are used for particular outcomes. Research comparing feature use or outcome attainment tells us a lot about technology use, but the concern is often not on how the affordances serve as a relational bridge between these two. While we appreciate the use of affordances by many, we suggest that scholars be more forthright about their use of frameworks that lean toward feature orientations or deterministic perspectives (e.g., intentionally evaluating objects and outcomes), and that the scholarly community more broadly should allow for the flexibility to recognize the potential utility of such perspectives. Future research would benefit from applying this conceptual process described in different empirical contexts. Additionally, while our exemplar concepts were selected for their relative straightforwardness, applying the criteria to examples that are murkier could help to refine the criteria presented here.

Given our goal of explicating the concept of affordances, we do not present an operational definition here because the multifaceted nature of affordances presents opportunities for researchers to engage in deductive or inductive approaches depending on the focal interest. Our proposed criteria serve as a useful starting point for deductive research. For example, deductively, if a researcher analyzing technology use begins a priori with a set of affordances, they can then survey individuals to develop measures indicating the extent to which those affordances are perceived as present. Here the focus is on validating that the use of technologies is characterized by the distinct possibilities for action present in the user-technology relationship in a context. This approach is limited in that one cannot know all of the

affordances present in each setting, and may be limited in identifying new affordances in contexts of novel technology use. Alternatively, inductive approaches could use data regarding how people use technology to make determinations as to the actions possible in a given context. Our criteria can be used to foster greater validity in determining and assessing affordances. In this case, the focus is not on the specific outcomes of technology use, but how differential possibilities for action are present that might influence these outcomes. These two approaches can complement each other to offer rigorous research programs looking at the affordances of communication use. We recognize that there is no singular way to operationalize or identify affordances, and that communication research will benefit from scholars pursuing various methodologies to analyze the concept.

In sum, by better synchronizing use of the concept of affordances, researchers from various communication subdisciplines will be better able to build on each other's research and contribute to theory building. This allows scholars to ask questions about how different technologies may facilitate similar affordances, how similar technologies may facilitate different affordances, and how variations in affordances may lead to different outcomes. More importantly, it allows scholars to use the answers to these questions to develop theory about possibilities for action related to communication technologies. Adopting a more consistent stance on affordances means that theories can be tested, validated, disputed, or extended in a manner that will advance the field.

Notes

1 The following databases were searched: Academic Search Premier, Business Source Premier, Communication and Mass Media Complete, and PSYCarticles (human subjects). These were selected because they were likely to contain the most relevant research related to a communication perspective. These databases include research from the fields of Communication, Management, Psychology, as well as a multidisciplinary database (Academic Search Premier).
2 By prominent, we mean the journals with the highest frequency of affordances-focused articles over time.

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Appendix A: Prevalence of Affordances in Communication Technology Journals' Abstracts.

Journal	Number of articles
Information, Communication & Society	48
New Media & Society	32
Cyberpsychology, Behavior & Social Networking	16
Journal of Broadcasting & Electronic Media	15
Journal of Communication	15
Journal of Computer-Mediated Communication	14
American Behavioral Scientist	13
MIS Quarterly	12
Sociology	11
Cyberpsychology & Behavior	6
Media, Culture & Society	6
Total articles identified in 11 journals	**188**

Appendix B: Affordances Threshold Criteria.

Stage	Description	Fail Example	Pass Example
Preliminary	Use of "afford" is not used colloquially.	"The authors afforded participants anonymity."	N/A
Criteria #1: Is it an object or feature?	Confirm the proposed affordance is not the object of a feature of the object.	"A phone affords texting."	Anonymity can be described in terms of the "level of identifiability vs. anonymity" as an affordance, not as a property of an object (Halpern & Gibbs, 2013).
Criteria #2: is it an outcome?	Check if the proposed affordance is an outcome. Does the affordance link goals with an outcome that remains if goals change?	"Social media affords knowledge sharing."	Anonymity leads to a variety of outcomes such politeness (Halpern & Gibbs, 2013), and silencing (Fox & Warber, 2015).
Criteria #3: Does it have variability?	Can a proposed affordance vary? Can there be degrees of variability?	"Mobile media affords ubiquity." Or, "social media affords unintended audiences."	Technology can be used to anonymize content, and provide pseudonymity (Fox & Potocki, 2014), or 'nonymity' (Fox & Warber, 2015).