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The Conduct and Consequence of Research on Digital Communication

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Research on digital communication is best served by concentrating not on current technological tools, but rather on the novel processes of social and communicative change to which such technologies are often closely linked. Thus, scholarship should consider contemporary technologies mainly as manifestations of underlying phenomena rather than as particular objects of study and should cultivate a focus on the capabilities that span technologies. Theories in this domain, in turn, must concentrate on what is exceptional about technologies in terms of the psychological, social, and behavioral mechanisms that help to comprehend them in the long term. Seen this way, the key to understanding technological mediation is remarkably consistent even in the face of radical technological change.

Although the technologies of communication have changed radically in the last several decades, the key to understanding technological mediation has remained the same. Indeed, technological upheaval paradoxically demands that researchers focus their efforts not on novel *tools* of communication, but rather on the novel *processes* of social and communicative change to which technologies are often closely linked. Without recognition of this basic insight researchers stand to neglect the most critical elements of technological change in favor of enticing and important—but overly specific and fleeting—shifts in technological products, features, and outcomes. Thus, answers to the questions of what computer-mediated communication (CMC) research is today and should be tomorrow are one and the same: research on communication mediated by contemporary technological tools must focus squarely on what is exceptional about such tools *in terms of* the psychological, social, and behavioral mechanisms that help to comprehend them in the long term. Only by doing so will research produce an enduring understanding of communicative phenomena in a context of swift technological change.

To do this, scholarship should: (a) consider current technological tools or products mainly as manifestations of underlying phenomena rather than as objects of study in their own right, (b) cultivate a focus on the capabilities of technologies that spans technological tools, and (c) emphasize the identification, development, and modification of theoretical mechanisms describing the core processes of human communication as fundamentally connected to technological mediation. Adhering to these ideals stands to produce explanations of human responses to mediation that reach beyond current technical manifestations and therefore endure over time. Each of these standards is next explicated in turn, followed by their synthesis and an assessment of the challenges and potential advantages that might accrue to the study of mediated communication.

Emphasizing the phenomenon not the technology

Although technological changes are often prominent in perspectives on social history and societal transformation, decontextualized studies of particular technological tools or their usage often fail to provide broad or long-term insight. Such "object-centered" research tends to focus on the technology as a whole, emphasizing its uniqueness or newness in time or place "because the technology, as a material thing, has some particularly interesting feature[s]" (Nass & Mason, 1990, p. 46). Yet, new technologies soon become old and the very instinct that prompts consideration of these new tools also foreshadows their eventual modification or demise. A more sustainable approach is therefore to privilege strategies that emphasize the aspects of technology that are likely to endure in their importance over time and across tools.

Yet, the bias toward tools-based studies is reflected even in the longstanding label of "*computer-mediated*" communication, which emphasizes the means of mediation over its processes. To partially redress this bias, researchers might alternatively consider current technological tools or products mainly as *exemplars* exhibiting underlying phenomena rather than as particular objects of study in their own right. In this fashion, studies should emphasize the core processes of interest (e.g., studies of mediation in its various forms) over the particular tools that exhibit the capacity for such processes (e.g., studies of Twitter, etc.). Doing so mitigates against findings becoming outdated with changes to the technological tool under study and appropriately shifts focus from a particular tool to the underlying phenomena of interest.

As a simple example, consider hypothetical studies of a particular communication tool, such as the messaging application Snapchat, for instance. A typical strategy might be to query or observe some dimension(s) of people's Snapchat usage, such as their motivations or intentions for, or their frequency and outcomes of, use of the technology, perhaps within a particular subpopulation, geographic location, or culture of interest. Such studies might be considered research *of* Snapchat (i.e., as an object of study in its own right), and they would provide largely descriptive data on the state of Snapchat use today, while providing little insight into the cross-cutting or underlying capabilities of messaging tools in general. The value of research findings, however, would be dramatically different before and after Snapchat's relaxation of several features where messages are permanently deleted shortly after receipt. Thus, research on any technology as an object of study may not necessarily endure over time as technical modifications occur, does not generalize well to other tools unless capabilities are shared among them, and may not provide deep insight into underlying communicative processes more broadly if they are not the focus of study specifically.

Yet, Snapchat could nonetheless provide a valid site (versus subject) of study for an underlying phenomenon, such as the transmission of sensitive information to others, as long as the core capability of interest (e.g., information ephemerality) is appropriately manipulated or highlighted by the method of

inquiry. There is thus a critical difference between *studying a specific technology* (e.g., a study of Snapchat behaviors) versus studying a phenomenon *that happens to take place on* or *is currently manifest in* a technology, as a site of study (e.g., a study of a particular behavior that happens currently to be prevalent on Snapchat). In the latter case, Snapchat may serve, for example, as an instance of the underlying phenomenon of information ephemerality or persistence, which might affect the sharing of sensitive information. The implication is that other tools exhibit the same capability, potentially providing greater robustness and generalizability of findings. Focused studies of a specific capability manifest in multiple technologies thus make it easier to identify the most important aspects of influence, as discussed next.

Cultivating a focus on mediation across technologies

To uncover the enduring aspects of technological mediation, research must emphasize the basic communicative and social processes that are evolving as a consequence of contemporary technologies, rather than the specific tools that currently facilitate them. This entails identifying the critical elements of mediation as they occur in various forms of digital communication and then dedicating sustained attention to them across multiple studies, preferably across multiple technologies. Looking *across* technologies, then, researchers should be able to identify and understand the most critical and enduring components of mediated communication.

Many perspectives advocate this type of examination. The variable-centered approach, for example, is offered as a corrective to object-centered research (where technologies are examined holistically, as a consequence of material features thought to be new) and social-actor-centered studies (where technologies are subservient to variation across individuals or groups; Nass & Mason, 1990). In these latter cases, "theories that are specified or operationalized in terms of one technology can never be applied to any other technology" because it is not known "what feature or characteristic of the technology has been caused or has led to the effect under study . . . [since] any single technology represents a particular value on a *number* of variables" (p. 49).

To resolve this, the variable-centered approach proposes examining features that span multiple technologies to isolate their influence. By decomposing technologies into their component pieces they can be understood in terms of their relation with other variables of interest. Advantages include that the variables examined are likely to fluctuate across technologies, will be relevant across time as technologies wax and wane, may help to demonstrate similarities and differences between technologies, and can serve as independent, dependent, or intervening variables depending on the research question at hand.

Similarly, the mix of attributes perspective (Eveland, 2003) was proposed to redress media effects research that privileges the effects of different content, while treating media technologies largely as static delivery tools, thereby ignoring their actual impact. To do so, the perspective advocates considering media technologies as quantitatively different from one another, composed of a potentially wide variety of attributes, and as historically situated inasmuch as truly novel media attributes are rare. In this manner, attributes such as interactivity, control, or channel are manifest in multiple technologies and can be studied within and across them. Benefits from doing so include clarity in technology explication, a clear focus on the effects of media (versus content), identification of new variables that are shared among technologies, and the ability to focus on attributes spanning technological tools.

Finally, affordance approaches to the study of technology (e.g., Fox & McEwan, 2017; Gibson, 1979; Norman, 1988, 2013; Treem & Leonardi, 2012) note that technological tools are each composed of a host of features that are common to those who encounter them. The potential capabilities or uses of a technology, though, are potentially unique to each individual since every person interprets a technology in terms of its distinct utility to them (i.e., the uses it "affords" them). The same tool may therefore

afford different people different things and affordances are relational in that they are formed through interaction between technological features and the subjective interpretations and goals of individuals. Thus, affordances are the capabilities of technologies that can be exploited to facilitate an action or outcome and are rooted in particular technological features.

Consider an example of studying the potential relationship between the use of social media tools and opinion conformity: A simple hypothesis of digital mediation would be that Facebook use is positively related to group-level political opinion conformity (due perhaps to peer pressures to adapt to shared group norms). Facebook use (the independent variable) is measured and correlated with the amount of political opinion conformity among people's Facebook contacts (the dependent variable). This clearly constitutes an object-centered study *of* a technology (Facebook), and it therefore fails to capture the nuances of the technological mediation at play, saying merely that use of Facebook is related to conformity, without specifying the particular mechanisms underlying this relationship. This shortcoming is not addressed even if the proposed relationship is extended by, for instance, noting that the relationship exists among members of some subpopulation, such as those of a common location or cultural group, or if the outcomes are extended to include other factors, such as group polarization.

Reconsidering the same phenomenon along the lines of variable-centered, mix of attributes, and affordance perspectives, however, suggests a different and more enduring strategy. In these terms a simple hypothesis might be that enhanced opinion visibility (the independent variable) in social media environments prompts more group-level political opinion conformity (the dependent variable), again perhaps due to pressures to adapt to group norms. Indicators of agreement, such as the "like" option (in Facebook or Instagram), or re-tweeting (on Twitter), or "upvoting" (in Reddit), could be invoked to operationalize opinion visibility. In this way, cross-cutting features can be identified that, while embedded in particular tools, might also span multiple technologies. Liking, retweeting, or upvoting (as well as functions not yet invented that serve similar purposes) are specific to particular technologies and yet perhaps sufficiently similar to one another to span multiple tools. Consequently, valid research sites in this context include any venue where such features are prominent, thus extending both research opportunities and the applicability of research findings.

Put another way, opinion visibility is an affordance that might be manifest in the material feature of a "like" button (for instance), which may affect group-level political opinion conformity. The affordance of opinion visibility can thus be exploited by people via particular features (e.g., "likes") to signal outcomes, such as their dis/approval of others' opinions (perhaps resulting in more or less conformity, etc.). In this way, affordances draw specific attention to *digital mediation*, as they accentuate the novel *processes* of social and communicative change to which technologies are often closely connected. Because the affordance links the technology to an outcome "ignoring this [mediating] aspect of affordances reflects a theoretical leap and implies a deterministic argument where an object [technology] leads to the outcome *without any indication of the process or reasons for the relationship*" (Evans, Pearce, Vitak, & Treem, 2017, p. 39; emphasis added). Positing that Facebook use is positively related to political opinion conformity, as mentioned earlier, constitutes precisely this type of leap. By contrast, the explicit examination of affordances (e.g., opinion visibility) as manifest in features (e.g., likes) can provide a critical key to understanding the crucial *processes* of mediation that commonly occur through, and across, contemporary technologies.

Importantly, the key to digital mediation lies in the fact that technologies can facilitate relatively novel affordances by virtue of their features, compared to non-digital communication, such as the vastly extended reach, immediacy, or volume of opinion visibility facilitated by contemporary tools. Of course, these same features prompt studies that are both object-centered and more nuanced, which as noted are distinguished by their focus on the novel features of such tools versus the sustained affordances they

enable. To understand the lasting contribution of this perspective, though, requires a clear view of *why* the underlying relationships might occur, as informed by relevant theory, the importance of which is considered next.

Emphasizing theoretical mechanisms of technological mediation

Technological mediation is fundamental to contemporary social, economic, organizational, and relational contexts. The study of each specific technology, unique population, and particular outcome serves to incrementally illuminate these complex phenomena. Perhaps naturally then, studies that seek to explain these contexts are plentiful among research on digital communication. Research in this vein typically probes these complex and pervasive phenomena by examining particular communication technologies among specific populations toward identifiable outcomes, most commonly in the general form "what is the effect of technology X among Y users on outcome Z."

Yet, theory testing and development require sustained *comparisons* across substantially similar (or specifiably different) contexts (Walther, 2013) with a focus on established technologies, or on the variables or affordances that comprise them. Comparisons enable replication which, in turn, enables claims to be in/validated over time and theories to be appropriately refined. When studies are largely un-tethered to past (or future) work by virtue of their unique concerns, specific populations, particular tools under study at a specific point in time, or focused societal or organizational context, it is difficult to maintain consistency across studies, and therefore to isolate and compare the key phenomena of interest. Moreover, if effects are partially reproduced between studies that vary in these ways, it is unclear why. Due to this, conclusions drawn in one context may have limited generalizability and, in spite of the considerable value of such studies, their immediate and sustained contribution to theory are undermined.

Returning to the example of opinion visibility and conformity on Facebook, if the context of Facebook is unique or nearly so, findings will lose relevance through their lack of applicability across domains. Further refinement to populations under study, affordances or features exclusive to a particular tool, or historically-specific circumstances would further constrain the results, to the detriment of theory formulation, since comparability across studies would be undercut. And, if researchers cling too strongly to perceived differences in new technological contexts, for example by generalizing findings from users of Facebook to nonusers or users of other tools without consideration of important population or contextual differences, invalid findings would accrue. Similarly, such research could suffer if not appropriately informed by decades of research on the general dynamics of conformity, largely established by studies in face-to-face contexts. Because conformity is likely to be affected by group size, status, or cohesion, foundational findings in one domain (face-to-face) should to a large degree be expected to endure in others (e.g., online), and therefore should inform both contexts.

Many theories avoid these pitfalls by invoking the basic strategies articulated here. For example, rational choice theories of media selection (social presence and media richness theories; respectively, Short, Williams, & Christie, 1976; Daft & Lengel, 1986) share a focus on the degree to which users perceive particular technologies as conveying the physical presence of communicators or their "richness," and the degree to which they are therefore appropriate for addressing phenomena ranging in complexity. These perspectives thus focus on the affordances of presence/richness, as facilitated by various features of different technologies (e.g., the number and variety of communication channels available), to predict technology selection and/or the degree to which tools are invoked to address complex communication situations. In spite of their clear focus on communication technologies, these perspectives avoid being object-oriented since they are agnostic about the particular tools invoked, focusing instead on the degree

to which tools are capable of supporting the affordance of socially present/rich communication. Indeed, these theories' longevity is due, in part, to the fact that by focusing on the affordances supported by the features of technologies, rather than on the technologies exhibiting these features, they have remained relevant in the face of considerable technological evolution.

Accordingly, a core characteristic of the perspective proposed herein is the directive to identify and research the fundamental features of digital tools that represent enduring concerns, rather than focusing on fleeting capabilities or technological tools as a whole. Several strategies can address the related question of how to identify which among many possibilities constitute fundamental and enduring concerns and, therefore, which are most likely to offer the greatest long term value.

Relevant theoretical perspectives pertinent to the digital domain are an important source of identifying which phenomena should be the focus of research. For example, anonymity is an affordance that in social identity and deindividuation theories naturally emerges as an explanatory mechanism, since it can explain both the circumstances under which personal versus social identity is likely to be salient and the loss of self-awareness in groups, which are foundational to those theories. This was the impetus for the SIDE perspective (social identity model of deindividuation effects; Reicher, Spears, & Postmes, 1995), which explains online behaviors by examining the affordance of anonymity across technological tools. A key to SIDE's relevance is that the degree of anonymity is likely to vary across digital tools according to their features and users' perceptions of them. Nonetheless, SIDE's applicability is somewhat undermined as the visual anonymity on which SIDE effects depend are becoming less common (as, for example, social network venues that diminish anonymity have increasingly dominated people's online presence), suggesting that the phenomena researchers focus on are likely to evolve based on new knowledge, theoretical development, and shifts in the digital media environment.

Focusing on factors germane to digital communication that have garnered sustained concentration across studies is another useful strategy to identify which are the fundamental and enduring features of digital tools. Sundar (2008), for instance, has advocated examining the affordances articulated in the MAIN (modality, agency, interactivity, and navigability) model since they are useful factors invoked in many studies to explain the perceived credibility of online sources and information, given their applicability and relevance. Similarly, Fox and McEwan (2017) selected an inventory of affordances examined in prior research based in part on their incorporation in theories that feature communication channel selection, use, and effects. In this way, relevant features for study emerge from sustained bodies of research addressing them.

Finally, the identification of which underlying features are worthy of study can be facilitated through the deep understanding of technological tools gained from detailed, descriptive studies. Although idiographic research favors contingent, situated descriptions of human behavior, which suggests unique rather than generalized explanations, the rich insights from such work often suggest patterned behaviors that can reach well beyond any particular study. Re-framing particular observations in terms of technological affordances, for instance, might reveal broader insights about the processes of digital communication that become visible when linked across multiple studies. In this way, descriptive—even esoteric—studies can be used in the service of theory development by focusing on the social dynamics surfaced in such work.

Descriptive research can thus draw attention to (oftentimes initially novel) behaviors that emerge from technology use and can be used to link these phenomena together, thereby helping to demonstrate patterns that no one study could establish alone. For instance, whereas the first observation of technologies being used in a nonconventional or unintended way might be viewed as interesting but atypical, patterned behaviors of the same form across contexts and over time may in fact signal a sustained tendency for people to appropriate technologies in an "ironic" fashion to achieve goals

that were formerly unarticulated (Poole & DeSanctis, 1990), or may highlight intriguing "second-level" technology effects (Sproull & Kiesler, 1991), which may themselves signal important social behaviors, preferences, and patterns. A critical requirement in using descriptive studies to highlight generalizable social processes rooted in technological deployment, however, is to examine the insights achieved via description in a fashion that both leverages their considerable value while not merely producing object-oriented accounts of the tools involved. To achieve this requires specific effort to aptly describe the present research context while forging connections to existing findings in allied contexts, or even to extrapolate to potential future ones. Attention to such issues can be a critical complement to more nomothetic research as studies with a focus on emergent factors accrue across research over time. Building theoretical value in this way requires a specific focus on the relevant facets of mediation, an explicit statement of the behavioral and attitudinal mechanisms at play, and a clear articulation of theoretical boundary conditions.

Synthesizing perspectives on digital communication

Digital communication describes the process of information transmission in a fashion that emphasizes the relatively recent and comparatively novel interventions facilitated by contemporary communication and information technologies. These technologies intercede in important ways to influence communicative processes, and by extension outcomes. The types of intercession assume many forms, but among the most prominent are recent shifts in the scale, reach, identifiability, immediacy, and scope of human communication and information sharing.

Accordingly, digital communication includes direct, intentional communication among interactants as well as the residues of interaction resulting from tools of mediation that people subsequently invoke to make sense of their environments. Although many outcomes are posited to arise from digital communication—such as digital divides, group polarization, or political knowledge patterns, to name only a few—outcomes are best framed as the *products* of digital communication rather than part of the *process* of digital communication. The value in this distinction is in retaining a focus on the fundamental dynamics of digital communication, which are necessarily directly affected by technological mediation, over its downstream effects, which are not.

Perspectives that highlight the specific processes of mediation that occur across technological tools are useful in making this distinction clear. Although differences in terminology may at first appear to differentiate them, the variable-centered, mix of attributes, and affordance perspectives discussed earlier are united by their focus on the aspects of technologies that are potentially common across them, as opposed to the circumstances or features that distinguish them. These perspectives thus draw attention to processes of digital communication, since they accentuate the capabilities of technologies that are embedded in particular technological features across tools that can be exploited to facilitate actions or outcomes (see also Sundar, 2009). This attention to shared aspects across distinct technologies permits the identification of the critical dimensions of digital communication, while also enabling comparisons over time and tools that are the basis of theoretical formulation, testing, and revision. Seen this way, contemporary tools of communication are important mainly in terms of the capabilities they afford users, who exploit those affordances through a complex interaction between technological features and their subjective interpretations and goals.

This orientation to digital communication research is in many ways agnostic about the specific technologies under study. This is not to argue that technologies are not impactful in their own right. Indeed, there is a longstanding recognition that technological tools foster particular social arrangements and interactions (Winner, 1986). Yet, a focus primarily on the affordances of tools, as opposed to

their specific features or forms, can accommodate a wide range of concerns. Increasingly relevant questions about the interaction of human and machine agents, including developments in interface tools and artificial intelligence, can be understood in terms of the affordances of privacy, social presence, bandwidth, or anonymity, for example, in the same manner as more traditional technologies like email and social network use. When technologies are conceived in terms of user-based affordances rooted in cross-cutting technological features, distinctions among them are simultaneously foregrounded and backgrounded. Recent efforts to identify and specify common affordances across mediated and non-mediated channels (e.g., Fox & McEwan, 2017) thus provide important progress toward the study of contemporary technologies.

Yet, there are considerable challenges to the perspective advocated here. For instance, affordances are presumed to be shared across diverse technologies and abstract features are conceived to adhere across platforms, tools, and contexts. Can affordances, though, be separated from the specific communication environments in which they exist and are similar features thought to signal common phenomena truly comparable? To some extent the manner in which researchers address these issues depends on particular research goals. For example, the experimental induction of opinion visibility by manipulation of the volume of likes and the measurement of opinion visibility as a perceived affordance represent different research strategies under the same basic conceptual umbrella. In the former case opinion visibility is viewed as a variable signaled by environmental features with substantial shared meaning across tools or venues, and in the latter case it is seen as an affordance potentially perceived across various channels. Overall, if research is to view current technological tools mainly as manifestations of underlying phenomena and focus on the capabilities that span across them, these concerns need to be carefully considered.

More specifically, to address whether decomposition of technological usage across time is tenable as the technological context changes, researchers should periodically revisit conceptual and operational definitions, and the fidelity between them. For example, as technologies have evolved the affordance of interactivity has no doubt taken on new forms. To benefit from the research heritage on interactivity over time therefore requires both a consistent conceptualization of it, in order that its meaning endures across studies, and an appropriately flexible operationalization as well, in order that its measurement continues to capture its prominent and relevant manifestations. This level of adaptability is critical in a swiftly-changing media environment.

The main goal of this article is to articulate a set of research directives intended to facilitate a lasting and theoretically rich understanding of the processes of social and communicative change in an environment of rapid technological evolution. A general presumption has been that nomothetic research bests suits this goal. The principles advocated therefore privilege particular research heritages, strategies, and assumptions. For instance, emphasis has been placed on perspectives that help to divine variables that might apply across multiple technologies, research strategies that facilitate replication, and sampling procedures that enable generalization to populations. Although there is no necessary connection between this perspective and particular research methods, some strategies lend themselves well to such outcomes. For instance, experimental designs can isolate variables of interest and help to establish causality and survey research can be used to access representative samples of populations, to which inferences can therefore be drawn. In spite of the considerable value of other research approaches and methods, they are often less directly compatible with these particular goals.

Ultimately, research on contemporary communication and information technologies is best served by the paradoxical recognition that such tools are both the most and least interesting thing to study. Although communication technologies extend human capabilities tremendously, which makes them fascinating in their own right, they should not therefore constitute the subject of study. Rather,

communication technologies must be understood to be the objects engaged by people in their pursuit of particular goals, and the processes of realizing such goals should constitute the focus of research into them. Theories in this domain, in turn, must focus on what is exceptional about technologies in terms of the psychological, social, and behavioral mechanisms that explain them in the long term. In this way, the key to understanding technological mediation has remained remarkably consistent even in the face of radical technological change, and demands that researchers focus their efforts not on novel *tools* of communication, but rather on the novel *processes* of social and communicative change with which technologies are often closely aligned.

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