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Information, Interactivity, and Social Media

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The aim of this paper is to provide a conceptual theoretical framework to the term "social" in a social media context. This is done by exploring the relationship between three central terms in a social media environment: information, interactivity, and sociability. We suggest a model that describes the relations between these terms in a social media context. As the model suggests, information is the basic unit of a communication process, but social media users are the ones that decide whether and how much information to share, and when and whether to comment on a social media platform. Hence, not solely the technological features of a platform determine its level of interactivity and sociability, but the actual performances of its users.

Over the last decade, the equilibrium point of the web has shifted from top-down platforms that replicated mass media toward user-driven online platforms. At present, popular mainstream online platforms are uniformly tagged as "social media"—from social network sites like Facebook, Twitter, and Google Plus to Wikipedia and YouTube. Frequently, social media is considered an inherent element of Web 2.0 (Kaplan & Haenlein, 2010), a term coined by O'Reilly (2007) to describe the development of new platforms, features, and uses that build on users' participation in the form of user-generated content, decentralization, and rich user experience.

Although the term *social media* has become widespread in both academic and popular discourse, the notion has been used to describe various and somewhat different ideas. Social media is often considered a platform that facilitates information sharing and participation (Steenkamp & Hyde-Clarke, 2014). DeNardis (2014) suggested that social media is characterized by the affordances of user generated content and the users' ability to select and articulate network connections with other users. Indeed, social network sites, one form of social media, allow their users to interact with other users with whom they have different levels of familiarity. Kietzmann, Hermkens, McCarthy, and Silvestre (2011) defined social media as employing "mobile and web-based technologies to create highly interactive platforms via which individuals and communities

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share, co-create, discuss, and modify user-generated content" (p. 241). LaRose, Connolly, Lee, Li, and Hales (2014) also tied social media with information exchanges and defined social media as "communication channels that are used to form or maintain social relationships through the creation and exchange of electronic interpersonal communication" (p. 60).

The term "social" has also various conceptualizations. According to Fuchs (2014), four criteria construct the meaning of *social*: (a) information (and consequently cognition), (b) communication involving a reciprocal interaction process between at least two participants, (c) community, and (d) collaboration and cooperative work. These criteria underline the need to consider the realization of what is called "social" rather than assuming technological attributes in platforms that are inherently social. Indeed, according to Walther (2011), what makes a platform social is not solely its technological features. Therefore, he argued that the absence of verbal and contextual cues (e.g., body language, facial expression, or tone) in online-mediated environments could be compensated by users' familiarity and experience with a platform (Walther, 1992, 1996).

In this study, we try to look at the term "social" in a social media context and explore its relationship with two other important terms: information and interactivity. We start by exploring the characteristics of "information" in a social media environment, then focus on three research approaches to interactivity, and finally suggest an alternative explanation and a model to determine what is "social" in a social media environment.

INFORMATION IN A SOCIAL MEDIA ENVIRONMENT

Our age is often described as the "information age" or the age of "information overload." The term "information" originates from the Latin *informare*, which means, "to give form" or "to shape." The conversion of the word to English has broadened its meaning in ambiguous ways, to incorporate terms such as "communication," "facts," "knowledge," and "intelligence." Looking at the literature, we can see that "information" is often described in relation to hierarchies of data, intelligence, knowledge, and wisdom (e.g., Ackoff, 1989; Alter, 1999; Davenport & Prusak, 1998; Tuomi, 1999). According to these hierarchies, the highest level of information is "wisdom," followed by "knowledge," "intelligence," and finally "data" (Barabba & Zaltman, 1990), with every stage of the hierarchy implying a higher value of human cognitive activity.

Similarly, we suggest that social media contains a lot of information shared by users, but not all information requires the same amount of cognitive effort in production and consumption. Hence, social media activities might be perceived as hierarchical based on the cognitive effort needed to produce and consume them. For example, automatic features such as "like," "share," or "check-in" require less cognitive effort than writing a lengthy post. Thus, information sharing in a social media context might also be seen as hierarchical.

Media studies have long considered information to be a process-related concept. Indeed, many of the earlier models of communication offered by Wiener (1948), Shannon and Weaver (1947), Osgood (1954), Schramm (1954), and others treated communication as an exchange of information or messages between a sender and a receiver. According to the Shannon–Weaver (1947) model, the communication process begins with information selected by a "source"; that is, a transmitter codes the information so that it is suitable for transmission over a channel. The information then flows through a channel until it arrives at a "receiver" and is decoded.

Osgood (1954) took a major step in transforming the Shannon–Weaver model into a human communication model. Osgood asserted that the "source" and the "receiver" are functions that can exist within one person who attributes "meaning" to the signals. Osgood's attribution of meaning to the process of information exchange enables us to distinguish between two levels of information: the signals themselves, which can also be described as "data," and the interpretation of the signals that give them meaning as information.

In the information age, it is more important than ever to emphasize the central role that individuals play in transmitting information and giving it meaning. New media technologies enable individuals (and not solely gatekeepers or professional content producers) to consume, produce, and share online information and become cocreators of meaning. Hence, unlike the Shannon–Weaver (1949) model, which perceives information as having no intrinsic meaning and the process of communication as neutral, with no psychological factors involved, we embrace the importance of "meaning" as emphasized by information theory. If information "stands alone" or has no meaning for its user, then data, in the same sense, consist of words that do not create a meaningful sentence by themselves. Only when data are contextualized do they become information.

The view of information hierarchies discussed earlier is useful when one regards information as a measurable construct and attributes its meaning to the human mind. Hence, information is considered to be a subjective construct that applies to a higher order of cognitive processing than, for example, words or signs.

Although two separate concepts, the notion of information is closely related to the notion of interactivity, as interactivity is all about the transmission of information in a process of communication. Nevertheless, it is important to note that information can be simply spread without producing any interactivity. In other words, transmission of information is not enough to claim for interactivity, but interactivity requires transmission of information in order to exist.

This relationship between "information" and "interactivity" is especially important in a social media environment, where managing information and social relations are communicative actions that involve interaction. In the following section, we explore three research perspectives of interactivity and their relation to the concept of information and social media.

INTERACTIVITY

The last three decades have seen an ongoing scholarly debate over the definitions and measurement of interactivity (Avidar, 2013; Bucy, 2004; Heeter, 1989, 2000; Jensen, 1998; McMillan, 2002; Moore, 1989; Rafaeli, 1988; Rafaeli & Ariel, 2007; Schultz, 2000). There has been general agreement that interactivity is an important element of the communication process and serves as a relational maintenance strategy that contributes to relational outcomes. Nevertheless, there is no agreement on the operational definition of interactivity. Walther, Gay, and Hancock (2005) stated, "Interactivity, as a loose term is alive and well on the Internet and is a dynamic that begs for theoretical and practical attention from communication researchers. As a construct, interactivity has been undertheorized, and as a variable, poorly operationalized" (p. 633). Indeed, popular conceptualizations of interactivity include synchronicity, control, rapidity and speed, participation, a variety of choices, directionality, hypertextuality, connectedness, experience, and responsiveness (Rafaeli & Ariel, 2007).

Scholars have tended to define "interactivity" using three different research perspectives: (a) interactivity as a *perception-related variable*, focusing on participants' experiences and self-reports (Newhagen, 2004; Wu, 1999); (b) interactivity as a *process-related variable*, focusing on the ways in which participants transfer information to one another (Kelleher, 2009; Rafaeli, 1988; Rafaeli & Sudweeks, 1997; Rogers, 1995; Stewart & Pavlou, 2002); and (c) interactivity as a *medium characteristic*, focusing on the technological features of a medium and its ability to generate activity (Markus, 1990; Rust & Varki, 1996; Sundar, 2004).

Research into interactivity as a perception-related variable has frequently focused on customers and analyzes how various elements (such as multimedia, speed, and control mutuality) influence the ways in which customers perceive or experience the interactivity level of a medium. This has usually been done to implement findings from the advertising or marketing fields (McMillan & Hwang, 2002). Other research into interactivity as a perception-related variable has focused on the relations between the user's psychological and social characteristics and the user's perceptions of the level of interactivity of a medium (Sohn & Lee, 2005).

Similar to information theory, perceived interactivity assumes that media consumers perceive interactivity subjectively, according to their experience of using a specific medium and their expectations regarding the medium's level of interactivity. Hence, perceived interactivity includes two dimensions: The first is *preevaluation* of the realization of interactivity in future interactions. This evaluation may rely on previous experience with similar processes; early expectations from a technological setting; and personal, subjective estimates (Sohn & Leckenby, 2002). The second dimension of perceived interactivity is the *postevaluation* of the process experienced by the user. This evaluation might depend on the user's technological literacy, attention to the process, and involvement with the process. For this reason, various scholars (Downes & McMillan, 2000; Kiousis, 1999, 2002; Lee, 2000; Leiner & Quiring, 2008) have suggested disregarding the debate about the nature of interactivity in the real world and exploring it as a subjective entity and as a personal experience (Kiousis, 1999; Lee, 2000; Newhagen, Cordes, & Levy, 1996). For example, Newhagen (2004) argued that interactivity is an information-related process that takes place in the mind of a person when the person assimilates the meanings and interpretations of symbols during interaction.

Research into interactivity as a process-related variable has focused on the process of message transition and reciprocity in a communication setting, mainly regarding responsiveness and interchange (McMillan & Hwang, 2002; Rafaeli, 1988). In other words, this perception explores the ways in which participants transfer information to one another in a communication setting (Kelleher, 2009; Rafaeli, 1988). According to Rafaeli (1988), interactivity is "an expression of the extent that in a given series of communication exchanges, any third (or later) transmission (or message) is related to the degree to which previous exchanges referred to even earlier transmissions" (p. 111). Rafaeli suggested an interactivity model that distinguishes between noninteractive, reactive, and interactive responses. According to the interactivity model, there are three possible types of messages in the communication process. The first type of message produces declarative communication: one-way messages between a sender and a receiver or receivers. In this type of exchange, any participant might be a sender or receiver of a message in turn, but the message is always one-directional. An example of this type of message is a message board ("real" or online) in which each participant is potentially both a sender and a receiver. However, if the messages are solely declarative and do not refer to each other, then they are at the lowest level of responsiveness and are not interactive. The second type of message

produces responsive (reactive) communication—the messages are two-way directional, and the receiver also becomes a sender and reacts to previous messages. Nevertheless, the messages focus only on the requested information and not beyond it. An example is an interaction between a human and a computer game in which the user's commands result in a reaction from the game. Most computer games are responsive to users, although more "traditional" settings, such as personal interactions between humans, might also be reactive (e.g., a request—"How are you?"—followed by a response: "I am fine"). The third type of message produces interactive communication—there is a two-way flow of messages between a sender and receiver, each one in turn. In addition, the messages refer not only to the last turn but also to previous turns and encourage the continuation of an interaction. An example is a conversation between two people in which previous turns have become part of the conversation and the frame of reference for the whole conversation. This type of interaction might also be found in talkbacks, in which people converse on an online platform. Interactive messages encourage the continuation of an interaction, as they are relevant to the whole conversation and refer to all other turns, unlike reactive turns, which are very specific and bring the interaction to an end.

Rafaeli and Ariel (2007) suggested broadening Rafaeli's (1988) model to include a larger variety of "players" (human or "synthetic") in an environment that might include messages that are not aimed at one specific player and/or are required to be answered by a single player. An example is an online conversation on a social media platform in which two players can have an interactive conversation while other players follow the conversation and may join in. An example with other types of players is an online message board in which automated software might send a direct but automatic message to a particular user, stating, for example, not to use a certain word.

An additional theoretical contribution to Rafaeli's (1988) interactivity model was made by Avidar (2013), who presented the "responsiveness pyramid." The aim of the pyramid is to make a clearer distinction between "responsiveness" and "interactivity." The responsiveness pyramid suggests that all messages sent as a reaction to a previous message are responsive, although they can be *noninteractive* (a response that does not refer to the request), *reactive* (a response that solely refers to the request), or *interactive* (a response that refers to the request and initiates an additional turn/s) at the same time. In other words, an interactive response is a highly responsive message.

Research into interactivity as a medium characteristic is one of the most popular perspectives of interactivity. This view tries to identify the general characteristics of a medium (such as user control and two-way communication) or particular website features that enhance interactivity (McMillan & Hwang, 2002). The perspective of interactivity as a medium characteristic tends to assign labels of "low" and "high" interactivity to various media according to their technological features, thus ascribing high interactivity to new media (such as smartphones and tablets) and low interactivity to traditional media (such as TV and radio). Research into interactivity as a medium characteristic has mainly been conducted in the context of new media. Indeed, according to Steuer (1992), interactivity is "the extent to which users can participate in modifying the form and content of a mediated environment in real time" (p. 84). Bucy and Tao (2007) defined interactivity as "technological attributes of mediated environments that enable reciprocal communication or information exchange, which afford interaction between communication technology and users or between users through technology" (p. 656). Similarly, Rogers (1995) defined interactivity as users' control or "the degree to which participants in

a communication process can exchange roles and have control over their mutual discourse" (p. 314). Others, such as Liu and Shrum (2002), have provided a mixed definition, examining interactivity as "the degree to which two or more communication parties can act on each other, on the communication medium, and on the messages and the degree to which such influences are synchronized" (p. 54). Other perspectives on interactivity have embraced technological determinism. For example, media richness theory (Daft & Lengel, 1986) suggested that different media can be classified as "rich media" or "poor media" according to their characteristics.

Finally, the existing literature has revealed various attempts to categorize interactivity. McMillan (2002) distinguished among user-to-user, user-to-document, and user-to-system interactivity. Rafaeli and Ariel (2007) distinguished among user-to-user, user-to-medium, user-to-content, and medium/agent-to-medium/agent interactivity. Stromer-Galley (2004) distinguished interactivity as the product of interactivity as a process, whereas Newhagen (2004) differentiated between interactivity, an information-based vertical process at the individual level, and transmission, an energy-intensive, horizontal process among participants. As is elaborated in the next section, we argue that the perspective of interactivity as a medium characteristic is problematic because interactivity exists as soon as there is an ongoing exchange of information in a communication process. Hence, interactivity might be found in both new media and traditional media, whereas the communication process determines the level of interactivity for each exchange of information.

A DIFFERENT APPROACH TO INTERACTIVITY

As opposed to the perception of interactivity as a medium characteristic, we perceive interactivity as a process-related variable, whereas the transmission of information is in the center of the interaction (Rafaeli & Ariel, 2007). In our view, interactivity is not an inherent attribute of a medium that is defined by its technological characteristics. Rather, interactivity might be found in both new and traditional media settings, because interactivity is an attribute of the process of communication itself. In other words, although technological characteristics of new media help to break down the traditional differentiation between mass and interpersonal communication, new media is not necessarily more interactive than traditional media; rather, it enables interactivity ("enabled interactivity"). Hence, a face-to-face conversation might also be interactive, according to the type of message it conveys.

Emphasizing enabled interactivity rather than the inherent interactivity of a medium, Jensen (2008) claimed that the complexity of online-mediated environments requires a division of interactivity into four subdimensions (transmissional, consultational, registrational, and conversational interactivity), which demonstrates that technical perspectives of interactivity and user-centered perspectives of interactivity might somehow meet.

Recent technological developments and the process of media convergence, in which media became more diverse, mobile, present, and connected to one another (Jenkins, 2004, 2006) have simplified our argument. According to Jenkins's (2004, 2006) media convergence theory, the processes of media convergence changes the ways in which content is produced and consumed, altering the relationship between existing technologies, markets, industries, and audiences. Hence, from a perspective of interactivity as a medium characteristic, the process of convergence links media that cannot enable interactivity with media that can, thus making

it interactive. From a perspective of interactivity as a process-related variable, the actual usage of a medium by users and their actual interactions within a medium could exercise different levels of interactivity, both in new and traditional settings. For example, a Facebook page might contain several sporadic messages in a one-way style (low level of interactivity), whereas a telephone call might contain a vivid conversation among two friends (high level of interactivity). Hence, the perception of interactivity as mainly relevant to new media rather than traditional media is no longer accurate. Indeed, communication consumers today are also communication producers (or "prosumers"). These prosumers watch television programs on their smartphones, send text messages to reality shows, read electronic books, and use their tablets to read online papers and write talkbacks. In this communication environment, it is no longer accurate to label a specific medium as interactive and another medium as noninteractive. In other words, when exploring interactivity, we should not focus on the characteristics of a specific medium, because the medium might change and converge. Rather, we should focus on the process of message transition and reciprocity, as well as the ways in which participants transfer information to one another in a communication setting. Thus, we endorse interactivity as a process-related variable rather than a characteristic of the medium.

This perspective is especially important for social media scholars, who should not take for granted that social networks such as Facebook, Twitter, and Instagram are inherently interactive. Thus, even though social networks seem to represent new media while a television program or a newspaper article represents traditional media, the new platforms are not inherently interactive but rather enable interactivity. Thus, scholars who conduct research on social media should explore each interaction separately and decide whether the exchange is noninteractive, reactive, or interactive based on the process of message transition and reciprocity.

"SOCIABILITY" OF A PLATFORM

Similar to our argument that interactivity is a process-related variable consisting of information exchanges, we further argue that social media platforms cannot be seen as "social" based only on their technological attributes. Indeed, new communication platforms enable interaction and make online participation easier and faster than traditional platforms. Hence, the platforms themselves might be seen as *affordance technologies* that enable various levels of social involvement and participation. Jenkins, Ford, and Green (2013) used the terminology of "spreadable media" to describe the social media nature as a platform of active engagement in spreading content.

Nevertheless, the actual involvement, interaction, and activities performed by users on a platform determine the "sociability" of that platform. For example, if users do not use the options of "like," "share," or "comment," and do not post any statuses on Facebook, then Facebook will only become a social enabling platform instead of an actual "social" medium. In addition, users decide how active and "socially involved" they want to be in a particular context, situation, and platform and whether they want to "check in" or write a lengthy status on their "wall," hence determining the actual "sociability" of a platform. For example, two Facebook pages might differ in their levels of "sociability." If one page consists of an ongoing, vivid conversation among users (high level of sociability), whereas the other page lacks interaction and conversation (low level of sociability), the first page might be seen as a "social platform"

while the other is seen only as a "social affordance platform." In other words, sociability is determined by the number of exchanges and users of a platform: The higher the number of users and exchanges in a platform, the greater the level of sociability of a platform.

Online marketers understand the benefits and importance of "sociability" to the success of their businesses; marketers try to increase the participation and exchange on their social media platforms by inviting users to take part in online challenges and competitions; to upload their posts, photos, and videos; and to encourage users to "like" their products and services. Marketers understand that although they have new social media platforms, what counts is the number of users ("friends" and "likes"), interactions, and exchanges on their platforms. According to two online marketing gurus: "Technology is just that: technology. *Social Media is about people and how we can approach them as informed and helpful peers*" (Solis & Breakenridge, 2009, p. 154).

A MODEL OF INFORMATION, INTERACTIVITY, AND SOCIABILITY

As previously explained, various conceptualizations and models of information and interactivity have tried to clarify and define each one of these notions. Nevertheless, there has been no model that attempted to explain the relations between information, interactivity, and sociability. In this article we try to contribute to social media theory by suggesting a model that describes the relations between information, interactivity, and sociability in a social media context.

Media studies consider information to be a concept that constitutes a process of communication when exchanged between a sender and a receiver. Hence, the exchange of information stands at the core of every interaction. The type of exchange (noninteractive, reactive, or interactive) determines the level of interactivity of a platform, and the number of exchanges and users on a platform determines its level of sociability. Hence, as previously explained, different "pages" of the same platform (e.g., "Facebook") may perform differently in terms of sociability depending on users' decisions as to whether and how much cognitive effort to invest in producing and consuming information. In addition, it is possible that many users read a post but do not comment, "like," or "share" it, and therefore nobody knows that he or she visited a page (except to experts that use tracking programs for marketing purposes). In this case, these "lurkers" do not impact the level of sociability of a "page" or a platform because they do not "leave a trace" on the platform, although they actually "have been there."

Figure 1 presents a model that illustrates the relations between information, interactivity, and sociability in a social media context. As previously suggested, social media platforms serve as affordance technologies that enable various levels of social involvement and participation. Nevertheless, the actual involvement, interaction, and activities performed by users on a platform determine the "sociability" of that platform.

The model contains a graph in which axle X represents "level of sociability" and axle Y "level of interactivity" of a platform. Both "level of sociability" and "level of interactivity" are on a continuum from low to high levels. The model presents four communication settings in which the exchange of information stands at the core of the communication process.

In the first communication setting, there is a low level of sociability and a low level of interactivity. In this scenario, there are not many users and exchanges on a platform, and the information shared is mostly noninteractive (does not refer to previous posts; e.g., "check-in")

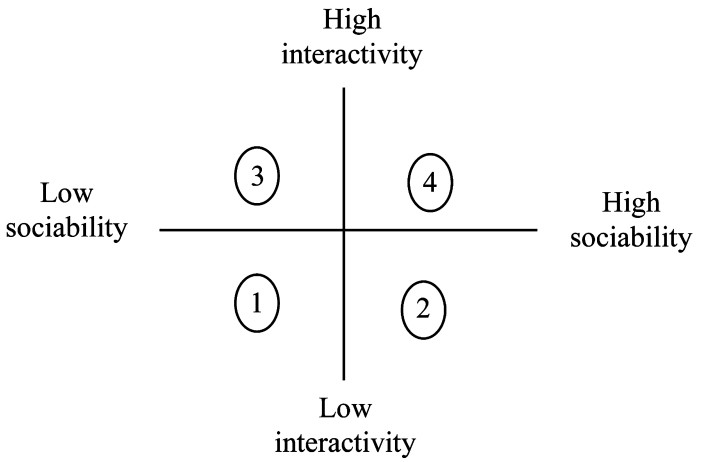

FIGURE 1 Information, interactivity, and sociability in a social media context.

or reactive (refers to previous posts but does not encourage further interaction; e.g., "like"). This scenario might represent a nonpopular platform that does not attract participants and the few participants (if any) that visited the platform and did not invest much cognitive effort in contributing information to the platform.

In the second communication setting, there is a high level of sociability and a low level of interactivity. In this scenario, there are many users and exchanges on a platform, but the exchanges are mostly noninteractive or reactive. Examples for this are popular platforms that have many visitors that "like," "share," "check-in," and even write posts on a platform, but their contributions either do not refer to previous posts or do not encourage further interaction.

In the third communication setting, there is a low level of sociability and a high level of interactivity. In this scenario, there are not many users and exchanges on a platform, but the exchanges are mostly interactive. An example for this might be a forum representing a niche (such as "exotic flowers"), in which a few members discuss an issue while referring to one another's posts, commenting, and asking questions.

In the fourth communication setting, there is a high level of sociability and a high level of interactivity. One might argue that this is the "ideal" social media setting because it contains many users and many interactive exchanges. An example for this might be a Facebook page of a famous football team or a "celebrity," with many "friends" that interact with each other, exchange information about coming events, ask questions, and comment on one another's posts. Nevertheless, it is important to note that the content and tone of exchanges are not relevant to the level of sociability and interactivity. For example, a popular Facebook page containing a lot of "bad word of mouth" and complaints might be high on sociability and interactivity if it has many users and interactive exchanges. Similarly, another Facebook page with "good word of mouth" might be low on sociability and interactivity if it has a few visitors and exchanges, mostly noninteractive or reactive.

As can be seen from the model, "interactivity" and "sociability" are two different constructs; a platform might be high on sociability and low on interactivity, and vice versa. It is also

worthwhile to note that social media automatic features (e.g., "Check-In," "like") do not usually generate a highly interactive social environment (despite the potentially high number of participants), because the ability to generate interactive responses (that refer to one another and encourage further interaction) through automatic features is limited.

Nevertheless, social media automatic features might increase the level of sociability of a platform because they encourage participation while using a minimum cognitive effort.

CONCLUSION

The aim of this study was to clarify what is "social" in a social media context and to explore the relationship between three central terms in a social media environment: information, interactivity, and sociability. We explored these notions and suggested a model that described the relations among information, interactivity, and sociability in a social media context.

As the model suggests, information is the basic unit of a communication process, but users are the ones who decide whether and how much information to share, and when and whether to comment on a social media platform. Hence, not solely the technological features of a platform determine its level of interactivity and sociability but the actual performances of its users. This resonates with our argument that although new media might be seen as "affordance technologies" that enable interactivity, interactivity is a process-related variable that exists only when participants refer to one another's content and encourage further interaction.

The differentiation made between information, interactivity, and sociability has a relevancy to social media scholars. Our model suggests that scholars should be cautious before determining the level of interactivity and sociability of a platform based solely on its technological features. Indeed, in some cases a traditional media platform might turn out to be more interactive and sociable than a new media platform.

Our model and conceptualization of information, interactivity, and sociability might be further used to compare the levels of interactivity and sociability of various online platforms (such as Twitter vs. Facebook) in various situations. Others can use our conceptualizations to explore additional constructs that play an important part in online communication and social media theory, such as responsiveness and synchronicity. Furthermore, social network analysts can easily use data-mining tools for harvesting posts, "likes," "check-ins," and the like, from a platform, and use our model to determine the level of sociability and interactivity of the platform explored. Indeed, Monge and Contractor (2003) defined network analysis as "an analytic technique that enables researchers to represent relational data and explore the nature and properties of those relations" (p. 35). Finally, this article implies that the investigation of a communication process within a social network site should start with understanding the interactive and social nature of the platform involved, rather than assuming its inherent social nature.

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