This article conceptualizes how the affordances of enterprise social networking systems can help reduce three challenges in sharing organizational knowledge. These challenges include location of expertise, motivation to share knowledge, and social capitalization in the form of developing and maintaining social ties with knowledge providers to actualize knowledge sharing. Building on previous theories and empirical research on transactive memory theory, public goods theory, and social capital theories, as well as recent research on enterprise social media, we argue that the affordances of enterprise social networking systems can better address these knowledge sharing challenges than those of conventional knowledge management systems in that social networking applications can blend connective and communal sharing of knowledge.

Key words: enterprise social networking, social media, knowledge sharing, transactive memory, information public goods, social capital.

doi:10.1111/jcc4.12033

Today’s economy runs on knowledge, and most companies work assiduously to capitalize on that fact. – Wenger & Snyder, 2000, p. 139

A key challenge for contemporary organizations is connecting and sharing knowledge that is distributed throughout the organization by linking people to each other and to knowledge content (Orlikowski, 2002). Organizations have developed conventional knowledge management (KM) systems to coordinate knowledge movement in the organization and leverage the organization’s knowledge resources. Conventional KM systems rely on a variety of technologies, including data warehousing, decision support systems, project management systems, expert systems, expert directories, intranets and extranets, and groupware. In the wake of the relatively limited success of such formal systems for what is essentially an informal, interpersonal process (Hinds & Pfeffer, 2003; LaMonica, 2006), organizations are increasingly experimenting with a variety of enterprise social media (ESM) tools as potential solutions...
to the problems of knowledge coordination (Yehuda, McNabb, Young, Burnes, & Reiss-Davis, 2008). ESM are enterprisewide “Internet-based technologies that allows users to easily create, edit, evaluate and/or link to content or to other creators of content (c.f., Kaplan & Haenlein, 2010)” (Majchrzak, Faraj, Kane, & Azad, 2013), and include such applications as wikis, blogs, social tagging systems, social bookmarking systems, microblogs, and enterprise social networking (ESNS) systems.

In this article we focus specifically on ESNS, for two reasons. First, ESNS are increasingly part of companies’ arsenal for achieving knowledge management goals (Brown, Schadler, & Catino, 2008; Cheung & Lee, 2010; Leidner, Koch, & Gonzalez, 2010). Second, the networking aspect of the applications directly addresses the need for connecting knowledge users to each other and to knowledge content. Networking highlights that knowledge sharing is as much as an interpersonal as a technological process. Social network systems (SNS) are “web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system” (boyd & Ellison, 2007, para 4). ESNS are SNS implemented inside bounded organizations to support social networking within the organization. Such systems typically also offer opportunities to post comments or status updates, suggest connections, search for people or topics, and visualize social networks.

ESNS can be used in conjunction with other ESM, and the particular combination will differ across implementations. Different ESM, however, are likely to be used differently and have varying implications. For example, wikis offer more interactivity than microblogs, and both will be employed differently than social tagging systems. We do not assume that all members of the class “ESM” should be examined together without attention to differences in their capabilities or patterns of use. Rather, our purpose is to examine the unique affordances of applications specifically designed to support social networking in particular, because decades of research have shown that social networking processes have significant effects for organizations, for example, knowledge sharing and transfer, innovation, conflict resolution, and inter-organizational strategic alliances (see Monge & Contractor, 2003 for a review).

In examining social networking, we recognize that recent scholarship has focused not on technology features, but rather on their affordances—the action potential in the relationship between the person and the technology. Majchrzak et al. (2013) define an affordance as “the mutuality of actor intentions and technology capabilities that provide the potential for a particular action (Faraj & Azad, 2012, p.3)” and highlight a “symbiotic relationship between human action and technological capability” (p. 3-4). Treem and Leonardi (2012) argue in favor of an affordance approach that focuses on “what combinations of material features allow people to do things they could not do before, or to do things that were previously difficult to do without the technology” (p. 10). Both of these affordance approaches focus on what people do with the technology and compare against what people do with other technologies. The affordance notion thus includes an implicit or explicit comparison of action potentials tied to technologies. Given our focus on knowledge sharing, we address Treem & Leonardi’s question as to what knowledge sharing could not be done as effectively prior to employment of ESNS, drawing on a comparison to the predecessor technology of conventional KM systems. Majchrzak et al. (2013) describe conventional KM systems as centralized, formal, supporting intermittent use, and reliant on “users consciously populating pre-constructed repositories” (p. 5), as compared to ESNS and other social media that are more decentralized and permit continuous contribution and emergent connections.

While retaining the concept of affordance, this article offers a somewhat different method for identifying affordances. We focus on the theoretically specified communicative actions that people seek in their relationships with technology relative to knowledge sharing. A focus on theory-derived affordance concepts begins to address an additional benefit highlighted by Treem and Leonardi (2012),
who note that adoption of workplace social media has outpaced our theoretical bases for understanding how they are implicated in organizational processes.

What theoretical base is appropriate for identifying affordances of ESNS relative to knowledge sharing? Monge and Contractor (2003) recommend that multiple theories be combined when conceptualizing and empirically examining social network phenomena (p. 295). They argue that different families of theories address different aspects of networks (e.g., some theories are most relevant to triadic properties, while other theories are more informative for clique structures), and thus more comprehensive explanations can be developed from applying a diversity of theories. Drawing on their ideas, we make a similar argument with respect to the multiple different processes involved in knowledge sharing through social networks since there is no single omnibus theory that addresses all of the important aspects of knowledge sharing processes in networks.

A key question, then, is how to choose a parsimonious set of theories that cover the major facets of the knowledge sharing process. Several criteria led us to the three theories that undergird the presentation in this article. First, we sought theories that have been applied in the context of conventional KM systems, in order to facilitate comparison of affordances to ESNS. Second, as Monge and Contractor (2003) note, theories should offer different prisms and focus on different facets of the process under investigation. For example, imagine a person is seeking to learn about how to run PNET, a network data analytic procedure. At least three facets are involved. The first is location, which involves finding the location of the information on the technique. Without location cues, search is unlikely to be very productive and the seeker may not succeed in learning about the data analytic technique. The second is motivation. Our scenario involves a motivated seeker, but the relevant experts need to be motivated to share it, either by direct communication or through posting to an accessible knowledge base. The third is social capitalization. Experts and novices need to find an appropriate and trusted method of connection. Even when expertise is located and there are no motivational barriers, people are generally more reluctant to share information with strangers compared to known others or “friends of friends.” Social networks can provide incentives for codification to make the data more accessible (Cross & Borgatti, 2004; Yuan, Carboni, & Ehrlich, 2010) as well as personal avenues for moving the knowledge.

Three theories were found to meet our criteria. Transactive memory (TM) theory and recent research extending the theory to knowledge repositories (Hollingshead, Fulk, & Monge, 2002) is highly focused on the location challenge and has been applied to conventional intranets. Information public goods (PG) theories (Fulk, Flanagin, Kalman, Monge, & Ryan, 1996; Fulk, Heino, Flanagin, Monge, & Bar, 2004; Hollingshead et al., 2002) focus on the motivation to share knowledge within a collective, and the theory has been applied to conventional data repositories. Social capital (SC) theories (Borgatti, Jones, & Everett, 1998; Krackhardt, 1992; N. Lin, 2001; Reagans & McEvily, 2003) are particularly relevant to the capabilities of ESNS for linking people to each other. Undoubtedly there are other communication theories that have implications for different affordances of ESNS, but these three theories provide a parsimonious, complementary, and relatively comprehensive view of knowledge sharing while linking to past foundational theory and research.

To recap, our purpose in this article is to show how a triumvirate of extant theories can serve as a springboard for conceptual developments related to how affordances linked to enterprise social networking may be implicated in location, motivation, and social capitalization processes for organizational knowledge sharing. The first three sections of the paper draw on these theories to (a) highlight key challenges and opportunities that organizations face in ensuring that knowledge moves effectively throughout the organization, and (b) assess how ESNS affordances could potentially help to address each of the challenges. We conclude with a set of caveats and a call for theory-driven research on ESNS affordances.
Locating Knowledge: Lessons from TM Theory

Not knowing where expertise exists in an organization is one of the major challenges in knowledge sharing in many organizations (Alavi & Tiwana, 2002). Lew Platt, a former CEO of Hewlett-Packard, is quoted as saying, “If HP knew what HP knows, we would be three times as profitable” (Davenport & Prusak, 1998, p. xii). TM theory has been applied to the challenge of locating expertise in conventional KM systems (Hollingshead, Fulk & Monge, 2002).

Core Ideas of the Theory

A TM system is “a group information-processing system” (Wegner, 1995, p. 191) that consists of individual memory systems, as well as communication processes linking these systems together. Members of TM systems use multiple repositories to store knowledge, including both people and documents/databases, and engage with these repositories in two general ways (Wegner, 1987). The first is by engaging in direct knowledge exchange with other persons, thereby acquiring information that is “stored” in those other persons. This method requires that the seekers must either know personally where the expertise exists or know someone who can tell them where the expertise exists. This avenue of knowledge seeking is “connective” because person-to-person connection is required for knowledge location, allocation and retrieval (Fulk et al., 1996, 2004; Monge et al., 1998). The second way is by participating in generalized exchange via communal information repositories. With generalized exchange, people can access stored information in a database or other external memory without having to know who holds the information. Fulk et al. (1996) labeled such information stores as “communal.” Field research has shown that connective and communal knowledge sharing interact in complex ways (Yuan, Fulk, & Monge, 2007).

TM theory and research has focused on the micro level, including individuals, dyads and/or groups. At this micro level, expertise location develops naturally through shared experiences and direct communication among the members of the group (Hollingshead, Fulk & Monge, 2002). Sources of expertise judgments include explicit cues such as personal assertions of expertise, reference from other group members, or credentials, as well as implicit processes such as stereotyping (e.g., Asians are good at math), inference from informal observations in the group, and personal interactions between group members (Hollingshead, 1998).

TM and Conventional KM Systems

Transactions to share information outside the local work group, however, pose problems for informal and implicit judgments, as has been noted by scholars who have applied TM theory to the larger organization in the context of conventional KM systems. Hollingshead, Fulk and Monge (2002) proposed that intranets could be equipped with features that allow users to detect where expertise is located in the organization, but that “knowledge that has not been externalized will be difficult to exchange directly over intranets” (p. 339). Knowledge available directly through intranets would need to have been codified and externalized to assist with location of expertise. Anand, Manz and Glick (1998) propose that individuals locate items in organization-level memory through the same processes as they do in groups, consulting directories or search processes. Conventional KM systems are capable of storing directories and can be searched for static information. Nevo and Wand (2005) propose a conceptual model in which meta-knowledge can be retained in a formal community-level system, although they acknowledge that “the main challenge . . . is to keep the meta-memories updated” (p. 558).

In combination, TM theory and its applications in the context of conventional KM systems suggest that organization-level knowledge location can be enhanced by technologies that offer at
least four functionalities. First, systems could provide explicit information about expertise, such as credentials, personal assertions of expertise, or references. Second, systems could provide mechanisms that substitute for the informal cues that are lost when moving from a group whose members have direct contact with each other to an organization where people may not know each other and may not have the opportunity to interact directly or observe processes of interaction. Third, since expertise may be located outside the work group, the system could provide information on paths to that expertise through other persons or databases. Fourth, systems could offer continual updating of expertise location cues. The first functionality for enhancing expertise location is offered by conventional KM systems, but the remaining three are difficult to accomplish with such systems. Can ESNS be employed to address the other functionalities? In the section below we provide an analysis.

**ESNS and Location of Relevant Knowledge**

Theory and research suggest that ESNS can contribute to up-to-date understanding of the distribution of relevant expertise. First, ESNS offer more real-time informal and social components (Zhang, Qu, Cody, & Wu, 2010; Zhao & Rosson, 2009) than conventional KM systems. For instance, comments on ESNS may convey more personal opinions and/or use more informal language and thus serve as indirect sources of inference on expertise. Experts identified through user generated content that is shared real time in ESNS can be more current than a conventional experts directory, which may be updated only periodically, such as in conjunction with annual performance reviews. This meta-knowledge affordance of ESNS can be used to make knowledge distribution that was once less visible to be more visible.

Second, ESNS combine the use of social connection data and stored expertise data to help not only to locate the right persons but also to visualize one or more paths to those persons (Shami, Ehrlich, Gay, & Hancock, 2009). For example, SmallBlue (C. Y. Lin, Griffiths-Fisher, Ehrlich, & Desforges, 2008) captures social network ties among employees and provides visual maps of network paths of different lengths between an expertise seeker and all potential expertise providers. Through reviewing the paths, seekers can decide either to contact the expertise holder directly, or pick any intermediate contacts for referral. This aspect is particularly important in large organizations where paths to knowledge will not be as straightforward as in a workgroup.

Third, ESNS can provide information on what Kane et al. (2012) call “knowledge conversations.” By observing interaction and communication among other users through their postings, comments, references, and discussions, a user can observe online conversations that give clues to who knows what. The ability of ESNS to make knowledge conversations visible to the community could substitute to some degree for the informal observation that underlies knowledge inferences in small groups. Even further, the user need not be present at the times of the conversation. Digital traces of these conversations are part of the system and can be revisited at any time by persons who did not participate as well as those who did.

Fourth, ESNS also can help to promote two-way awareness that facilitates knowledge sharing. Ehrlich and Shami (2008) found that the interactivity and publicity of ESNS also enable motivated knowledge providers to “push” expertise to needed parties at ease, a critical process described in TM theory as “information allocation.” Such increased knowledge sharing and retrieval can contribute to development of expertise awareness.

In summary, compared to conventional KM systems, ESNS offer more up-to-date information, informal social interaction, information on paths to expertise, and two-way interactions. In combination,
these capabilities offer an affordance that can facilitate locating relevant, up-to-date expertise within the organization.

**Motivating Knowledge Sharing: Information Public Goods Theory**

Although location of relevant expertise can create favorable conditions for knowledge sharing, it is not sufficient by itself to ensure it. Experts’ motivation for sharing is a major challenge, particularly at the organizational level (Hinds & Pfeffer, 2003). One theory that has been applied to this challenge in the context of conventional KM systems is information public goods theory, which conceives of knowledge as an organization-level public good produced through collective action (Fulk et al., 1996, 2004; Hollingshead et al., 2002).

**Core Ideas of the Theory**

Public goods are resources possessed by a collective under two conditions. First, no member of the collective can be excluded from enjoying the benefits of the good. Second, use of the good by any member of the collective does not diminish the amount of the good available to other members (Hardin, 1968). The core of the PG approach is that individual participation relies on individual perceptions of personal and organizational gain, based on a calculation that balances the *benefits* of the collective good against the *costs* of participating in it (Marwell & Oliver, 1993). PG theories have been applied to knowledge, and not just to tangible goods like roads and libraries (Fulk et al., 2004; Wasko & Faraj, 2005). One critical difference is that, unlike material goods, “knowledge is a resource . . . that [cannot be] be forced out of people” (Kim & Mauborgne, 1997, p. 17); people must be able and motivated to share (Kalman, Monge, Fulk, & Heino, 2002).

**Information Public Goods and Conventional KM Systems**

Research has identified factors that *increase costs* for sharing to a collective knowledge resource. First, knowledge sharing is demanding on time and energy. Experts, in particular, have difficulty in transferring knowledge to novices because experts’ mental models are more abstract and simplified; experts must re-conceptualize their knowledge in more concrete and detailed ways for the novice (Hinds & Pfeffer, 2003). These demands can be particularly troublesome when knowledge is tacit and may not be held at the conscious level (Hinds & Pfeffer, 2003). Conventional KM systems are less helpful for sharing tacit knowledge. Even where knowledge has some codifiable aspects, experts can find it demanding to figure how to codify the knowledge for input to a conventional KM system so that novices can reuse it (Hinds & Pfeffer, 2003).

Second, the need to have trust in those who have access to one’s knowledge contributions can be a barrier to conventional KM systems. Monge et al (1998) found that law enforcement officers were not willing to make knowledge available to a larger law enforcement collective through a communal repository, but were willing to share selectively with at least a subset of the collective whom they trusted, but would do so only outside of the communal KM system.

Despite costs, a number of factors can *increase the benefits* to people for sharing knowledge public goods, counterbalancing the costs. First, positive reputational effects can be created by making contributions to conventional KM systems visible to others (Weber, 2004). Second, external incentives can be helpful especially in the early stages of the communal effort when less collective knowledge is available in a conventional knowledge repository (Connolly & Thorn, 1990). Third, Kalman et al., (2002) found that contributions to a conventional collective repository were facilitated by shared collective goals. In combination, these studies suggest contextual features and boundary conditions for success of conventional KM systems.
ESNS and Motivation

Use of ESNS can potentially mitigate some of the costs identified in relation to motivations to contribute to conventional knowledge repositories. First, experts and novices can engage in “knowledge conversations” (Majchrzak et al., 2013) through which knowledge is transferred, rather than requiring the expert to pay the cost of codifying knowledge for input to a formal repository. For example, using Chatter, IBM Connections, JIVE or Yammer, a novice poses the question “does anyone know how and why the latest revisions to our custom software might throw off my risk assessment calculations?” The question might bring in several points of view from different experts as well as suggestions for whom to talk to about the issue. The interactions might also expose that others were having issues with the software as well. As the conversation developed, the participants might be able to better define a problem that could not easily have been anticipated nor solved through a conventional knowledge management system. Second, ESNS can facilitate selective sharing of knowledge among trusted subsets in the network within the communal system itself, potentially removing the motivational barriers to open sharing in a traditional repository that Monge et al. (1998) found.

ESNS also may enhance benefits for collective knowledge sharing, in several ways. First, most ESNS can provide the same level of identification of contributors that is found in conventional KM systems, contributing to reputation effects. The visibility of contributions on social media platforms (Treem and Leonard, 2012; boyd & Ellison, 2007) can make free riding more apparent and, hence, reduce social loafing behavior among employees. Furthermore, although people may be selective in deciding with whom to share their expertise in ESNS, the public nature of ESNS can generate awareness of connective sharing among close friends, increasing the likelihood of critical mass. Wasko, Teigland and Faraj (2009) found that people are more likely to contribute to online communities of practice when a core of contributors exists and when they share strong ties within the community. In addition, most ESNS offer immediate feedback functions, such as comments or “likes.” Brzozowski, Sandhold and Hogg (2009) found that visible feedback in the form of posted comments increases members’ motivation for participation in ESNS. Feedback in ESNS can be more timely, up-to-date, interactive, and ongoing than is possible in conventional KM systems. Second, as with conventional KM systems, incentives have been applied successfully to ESNS to increase participation. Farzan, DiMicco, Millen, Brownholtz, Geyer & Dugan’s (2008) study of IBM’s Beehive systems found that visible incentives increased contributions of a wide variety of stimuli, including not only codified knowledge but also photographs, lists, comments, and profile updates. Indeed, Thom, Millen and Dimecco (2012) found reduced contribution to the ESNS after removal of the incentive system. Third, ESNS support interactivity, particularly informal communication, which can contribute to the kind of shared goals that provide a positive contextual effect on knowledge sharing (Nardi, 2005; Kalman et al., 2002). Leidner et al. (2010) found greater sense of belonging to the organization by new hires who participated in organizational social networking. Wu et al. (2010) found that use of several features of ESNS, including mutual content profiling and mutual viewing of profiles, was positively related to feeling of emotional closeness with colleagues; and that this ESNS-supported closeness was related to content recommendations and general activity levels.

In summary, ESNS users may not experience the same costs of contribution as compared to conventional KM systems. ESNS use also can have important benefits to motivation for knowledge sharing. Although conventional KM systems and ESNS are both likely to benefit from external incentives, ESNS are particularly valuable in making contributions visible and identifiable, creating spaces for informal interaction that supports common identity creation, providing feedback, and allowing selective sharing with a subset of participants.
Leveraging Social Networks: Social Capital Theories

Even motivated sharers with awareness of relevant expertise distribution can face obstacles to sharing if they do not have appropriate interpersonal connections through which to move knowledge (Hinds & Pfeffer, 2003; LaMonica, 2006). Previous KM research shows that SC can improve both the search and transfer processes of knowledge sharing (Hansen, 1999). SC is resources that people can mobilize from network relationships (N. Lin, 2001).

Core Ideas from Social Capital Theories

Borgatti, Jones and Everett (1998) argue that the specific levels of SC accessible to a person can be influenced by network features at multiple levels of analysis, including network size, density (number of connections relative to total possible number of connection), tie strength, diversity of ties, number of ties that support either bonding with people of similar characteristics or bridging to people of different characteristics, among others. Although all these structural indicators of social networks can be used to measure SC, most existing studies on the impact of SC on knowledge sharing focus on dyadic features, such as strong ties, which can be evaluated by frequency of interaction, as well as emotional closeness of such interaction (Krackhardt, 1992). Hansen (1999) found in field research that strong ties were more useful for transferring tacit knowledge, whereas weak ties were more useful for searching for explicit, codified knowledge. By contrast, Reagans and McEvily (2003) found that strong ties were preferred for knowledge seeking and transfer for both knowledge types. Uzzi (1997) found that joint problem resolution in information sharing occurs only when both parties shared embedded, rather than arm-length connections. Yuan, Fulk and Monge (2007) found that strong ties are crucial for turning awareness of where to find needed expertise into actual access to expertise.

Reagans and McEvily (2003) argue that examination of network sources of SC should also consider network-level characteristics, e.g. cohesion and network range. Cohesion refers to the “extent to which a relationship is surrounded by strong third-party connections” (p. 245) because a common third party/friend can increase trust, and hence reduce the cost of knowledge transfer from the source. Network range refers to the “extent to which network connections span institutional, organizational, or social boundaries” (p. 245). A wide network range is beneficial for knowledge search because it implicates more diverse sources, permitting people to leverage weak ties to reach new resources and strong ties for support. Cummings (2004) also found that structural diversity among group members, including differences in roles, locations, reporting relationships and business unit affiliations, is valuable for external knowledge sharing. Wasko and Faraj (2005) found that people contribute knowledge to an online community more when they are structurally embedded (central) in a social network.

Network connections also can be valuable as filtering mechanisms. In a knowledge economy marked by explosion of the availability of information and data, a common problem for employees is how to sift through and analyze the information they receive in order to determine which source provides true expert knowledge (Wathen & Burkell, 2002). Under such situations, SC in the form of interpersonal connections with credible sources becomes extremely valuable to enable employees make such judgments (Yuan, Rickard, Xia, & Scherer, 2011).

Social Capital and Conventional KM Systems

Can conventional, centrally organized KM systems afford the types of SC formation that can facilitate to knowledge sharing? Hinds and Pfeffer (2003) note that by focusing primarily on supporting physical accessibility of information and knowledge, conventional KM systems are more effective in archiving knowledge than they are at connecting with experts to ensure actual accessibility to expertise.
Conventional KM systems are poor at supporting the basic requisites of social capital formation and use in that they lack the interactivity that supports formation of social ties (Culnan, 1985; Hinds & Pfeffer, 2003), and inadequately consider the social, contextual characteristics of knowledge (Alavi & Leidner, 2001). As a senior manager at IBM succinctly put it “The reason [conventional] knowledge management failed is quite simple: Knowledge inherently resides in minds. Putting it into a system that can be managed is inherently flawed” (LaMonica, 2006, para 6). Indeed, SC formation is perhaps the most readily observed enhancement of ESNS compared to conventional KM systems.

ESNS and Social Capitalization

boyd and Ellison (2007) maintain that one of the defining characteristics of social networking applications is increased interactivity, which we argue promises a rich source of SC. As noted earlier, SC is a conglomerate term (Portes, 1998) that can be evaluated along multiple dimensions (Borgatti, Jones, & Everett, 1998). We argue that frequent usage of social networking applications can improve the acquisition, development and application of SC along many of these dimensions, a set of processes that we label social capitalization. A variety of studies have shown that social networking is related to bonding SC. In a recent study on alumni connections, Farrow and Yuan (2011) found that active participation in Facebook groups contributes to two key dimensions of the tie-strength indicator of SC, including frequency of communication and emotional closeness. Steinfield et al. (2009) studied the relationship between the enterprise social networking use in IBM and employees’ perceived level of SC, and found that the visibility and tractability of social networking interactions at work had a positive effect on the density and tie-reciprocity indicators of SC. Ferron, Frassoni, Massa, Napolitano, and Setti (2010) studied employees at a research institute in which ESNS had been rolled out for some but not all employees. Their survey found that those who had access to ESNS (about 1/3 of the organization) reported greater SC than those who did not have such access. Furthermore, SC was positively related to self-reported ESNS use, although not to system logs of usage.

Employees also need to absorb external resources in order to expand their scope of knowledge and expertise. Several studies have shown that social networking is related to bridging SC. In a study on Facebook usage among college students, Ellison, Steinfield and Lampe (2007) found that social networking technology provides the unique affordance of interactivity that help users to create and maintain heterogeneous (bridging) ties. In the ESNS context, such bridging ties to friends’ friends can help increase both the size and diversity of network ties to people from different countries, regions, business units and/or teams (DiMicco et al., 2008). They also provide the linkage that connects disparate local networks into one community.

ESNS also can spur new connection (Majchrzak et al., 2013). As Treem and Leonardi (2012) note, most ESNS systems suggest connections that might be valuable to a user. Visualizations of networks that show paths to potentially valuable network connections have been found useful to connect expertise seeker and holders (Shami et al., 2009). Furthermore, information offered in profiles and postings can be scanned in order to determine the value of a potential new connection (DiMicco, Geyer, Millen, Dugan, & Brownholtz, 2009). The capability to display information that permits users to seek out new associations is not unique to ESNS compared to formal KM systems. However, the ability to use real-time data based on informal association can offer a kind of personalized, informal, up-to-date recommendation system unique to ESNS.

Taken together we argue that social capital developed and sustained in enterprise social networking platforms is connective when it buttresses stronger interpersonal connections, and it is also communal when connective communications among interacting individuals are made visible and public to the whole community. Such seamless blending between connective and communal interactions can help
employees even in a loosely connected network enjoy better chances of reaching one another through intermediate connections of varying path lengths. As a result, employees can connect with a larger number of employees from both the same and different countries, regions, business units and teams, with stronger relationship quality and greater mix of diversity. Thus, we argue that compared to conventional KM systems, ESNS afford more extensive connections, and thus help to create and sustain the social capital that is so critical to knowledge sharing.

Some Caveats

As with any technology, uses can lead to a variety of different outcomes. In addition to improved location, motivation and social capitalization, ESNS may afford other uses and outcomes as well. First, with regard to motivation, there is no guarantee that motivated sharers will share the most accurate and up-to-date information. Connolly and Thorn (1990) argue that for conventional knowledge repositories, the more incentives that exist for sharing, the more people will share more quantities of information even if the information is of low quality. The social aspect of ESNS and the ability to post comments and reactions may serve to offer some opportunities for correction, but in no way guarantees that false or low quality information will not be propagated in the system. Second, poor quality information can, in turn, generate poor inferences regarding expertise location, leading people to incorrectly decide who or what is an appropriate source of information, or what is the best network path to follow to reach that person or information. As with any structural signature, inferences made from configurations absent content information can be biased. Third, the increased ability to build and sustain networks in no way guarantees what properties those networks may develop. Majchrzak et al. (2013), for example, cite the potential for social media to promote the network property of preferential attachment, a situation in which people tend to link to people who are already highly connected in the network, producing a “rich get richer” phenomenon that could decrease the diversity of information and opinion that flows through the network. Preferential attachment also could lead to overloads for those who are preferred nodes in the network, which may make a popular node withdraw from the knowledge conversation as means of managing her workload.

Discussion and Conclusion

Our purpose in this article was to apply concepts from three extant theories to address how affordances linked to enterprise social networking may be implicated in organizational knowledge sharing. The problem is important because, more than at any other time in human history, advances in the 21st century will be based on networks of human knowledge. Effective knowledge sharing systems are crucial to for-profit firms seeking competitive advantage, but also to virtually every possible type of organization in every part of the globe.

The growing popularity of enterprise social networking applications has brought calls for a theory-driven approach to understanding their uses in organizations (Treem & Leonardi, 2012) and we have offered a multi-theory framework. We have argued that the affordances of ESNS provide the opportunity for employees to manage their existing connections while expanding their future ones, which could potentially benefit organizational level knowledge sharing. Von Krogh (2009) emphasized the importance of developing information systems that support sharing of both individual and collective knowledge. Moreover, dovetailing with our earlier argument about the importance of studying complementary usage of connective and communal TM systems to boost awareness of
<table>
<thead>
<tr>
<th></th>
<th>Conventional KM Systems</th>
<th>ESNS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location</strong></td>
<td>• Can provide explicit and codified information about expertise, such as credentials, personal assertions of expertise, or references, although a challenge is keeping it up-to-date</td>
<td>• Informal, social aspects facilitate up-to-date information</td>
</tr>
<tr>
<td>(Transactive Memory Theory)</td>
<td></td>
<td>• Visualizations of social networks facilitate finding paths to expertise</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Visibility of knowledge conversations facilitates informal inferences regarding expertise</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Interactivity and publicity facilitate two way interaction and “pushing” knowledge</td>
</tr>
<tr>
<td><strong>Motivation</strong></td>
<td>• Supports sharing codifiable knowledge</td>
<td>• Knowledge conversations could reduce the need for codification in the sharing process</td>
</tr>
<tr>
<td>(Information Public Goods Theory)</td>
<td>• Facilitates more communal than connective and/or selective sharing.</td>
<td>• Selective knowledge sharing options could reduce barriers found for broadly accessible repositories</td>
</tr>
<tr>
<td><strong>Benefits</strong></td>
<td>• Can provide reputational benefits</td>
<td>• Can provide reputational benefits, reduce social loafing by making contributions more visible, and make selective sharing visible to the community, all of which can support critical mass; feedback can support contribution through being timely, interactive, up-to-date, and ongoing</td>
</tr>
<tr>
<td></td>
<td>• External incentives can support use</td>
<td>• External incentives have been shown to increase interaction, commenting, and two-way exchange</td>
</tr>
<tr>
<td></td>
<td>• Use is facilitated when the context is characterized by shared collective identity and goals</td>
<td>• Use of interactive ESNS features has been shown to create the sense of belonging to the organization and emotional closeness to colleagues that have been shown to facilitate knowledge sharing</td>
</tr>
<tr>
<td>Social Capitalization</td>
<td>Conventional KM Systems</td>
<td>ESNS</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>(Social Capital Theories)</td>
<td>- Supports physical accessibility rather than social accessibility and more communal than connective processes</td>
<td>- Use of ESNS facilitates both bonding ties such as reciprocity and density and bridging ties such as spanning structural holes and network size</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Information displayed in ESNS posting, profiles and other interaction, particularly real-time, informal association, facilitates making new connections</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Seamless blending of connective and communal social capital in ESNS facilitates relationship quality and diversity</td>
</tr>
</tbody>
</table>
expertise distribution, the two types of sharing mutually enforce each other. On one hand, a communal knowledge pool, because of its publicity, can foster and facilitate purposeful connections (connective) to actualize access to expertise. On the other, explicit and visible connections (communal) on social networking applications could foster the norm of collaboration and sharing within a community regardless of whether members of the community share direct interpersonal ties. Taken together, we argue that ESNS afford both connective and communal relations, and hence, can address expertise awareness and motivation challenges in knowledge sharing where conventional KM technologies fall short (Hind & Pfeffer, 2003).

This article offers a roadmap for conducting theory-driven research on how use of ESNS can reduce knowledge-sharing challenges. Treem and Leonardi’s (2012) work provides a timely review of how ESM as a category can better serve organizations’ needs than conventional ICTs. More work is needed to extend their work on comparing conventional ICTs and ESM as a cluster, as well as to assess the degree to which different ESM may be employed to serve similar or different needs (Majchrzak, 2009). Given that ESM have some common features, as has been argued by Treem and Leonardi (2012) and Majchrzak et al. (2013), the conceptual development in this article may serve as a starting point for focusing on other specific ESM applications. This article is not intended to offer an analysis of all ESM and we make no claims about other ESM. Nevertheless, the theoretical rationales described here offers a possible point of departure for others who may wish to develop conceptualizations tied to other ESM. It is unlikely that the action potential of other ESM will exactly match that of ESNS, even with the same set of users in the same context. Wikis, for example, may afford more knowledge contribution through shaping behavior than would a blog (Yates, Wagner, & Majchrzak, 2010).

Our focus in this paper has been on how knowledge moves around organizations. Knowledge, of course, is not static, and is constructed, shaped and reconstructed as it is interpreted by the participants as they come into contact with it. This knowledge construction process is entwined with knowledge sharing in that knowledge passes through people who bring their own lenses, blinders, constraints, and perspectives to construct their own versions of knowledge. Social networks are deeply implicated in this construction of knowledge through interpersonal interaction. Shared constructions of knowledge can flow through networks, gaining momentum in relation to the structure of the network and processes such as preferential attachment. Given that conventional KM systems focus on static knowledge (Majchrzak et al., 2013), ESNS may have greater potential for affording knowledge construction processes. Future theorizing on ESNS through the “prism” of knowledge construction processes has considerable potential for illuminating the potential affordances of ESNS for knowledge construction as well as knowledge flow. Additional theories that might be applied to expand the conceptual frame offered here to focus more on the knowledge construction facet include, for example, structuration and adaptive structuration theories (Giddens, 1979; Poole & DeSanctis, 1990), the social influence model of technology use (e.g., Fulk, Steinfield, & Schmitz, 1990), social construction of technology models (e.g., Pinch & Bijker, 1984), and actor-network theory (e.g., Latour, 2005).

Finally, it is important to note that the three theories discussed here in no way exhaust the possible theoretical bases for conceptualizing ESNS affordances in relation to knowledge sharing. Space does not permit extensive examination of other theories, and we have offered a specific rationale for the choice of these three. The interested reader may find insight in the work of Monge and Contractor (2003) who offer a multi-theoretical framework that includes other theories that could potentially be relevant to the social networking aspect of ESNS. There is fertile ground for additional work examining affordances from a multi-theoretical perspective.
Acknowledgements

The research was supported by grants from the National Science Foundation (IOC #0822814 and 0822874). We thank Li Lu and Peter Monge for comments on earlier drafts.

References


Communities and Technologies (pp. 245–254). New York City, NY: ACM.
doi:10.1145/1556460.1556496


**About the Authors**

Janet Fulk is Professor of Communications in the Annenberg School for Communication and Journalism and Professor of Management and Organization in the Marshall School of Business at University of Southern California. Her research centers on social aspects of knowledge and distributed intelligence, enterprise social networking, nongovernmental organization networks, and dynamics of online communities.

**Postal address:** 3502 Watt Way, Los Angeles, CA 90089-0281 USA.
e-mail: fulk@usc.edu

Y. Connie Yuan (PhD, University of Southern California) is Associate Professor in the Department of Communication at Cornell University. Her research interests focus on knowledge management, social network analysis, intercultural communication, and computer-supported collaboration in distributed teams.

**Postal address:** 308 Kennedy Hall, Cornell University, Ithaca, NY 14853.
e-mail: ycycornell@gmail.com