

# Social Capital and Construction Project Management: a Vignette and Theoretical Framework

Tas Yong Koh (email: tasykoh@hku.hk)

Department of Real Estate and Construction, University of Hong Kong, Hong Kong

Steve Rowlinson (email: steverowlinson@hku.hk)

Department of Real Estate and Construction, University of Hong Kong, Hong Kong

Martin Morgan Tuuli (email: m.m.tuuli@lboro.ac.uk)

School of Civil and Building Engineering, Loughborough University, UK

## Abstract

*Extant discourse of organizational social capital has been concentrated on permanent organizational settings. The basic tenet of the concept of social capital is that the social relations of actors within social sphere can be used to facilitate actions among the focal actors and those others that are directly or indirectly associated with the focal actors. This utilitarian notion of the concept should transcend organizational settings. In this respect, although paradoxical, with the construction project peculiarities of fragmentation, the lack of a central authority, transient organizing, interdependence and the resultant need for integration, and relative closure, social capital may be more relevant to project organizing. However, given that social capital represents the primordial feature of social activities among actors and its utility is contingent upon active use and engagement, the effects of social capital on project organizing is likely to be channeled through project organizational processes. We examined this proposition with the use of a vignette derived from case study of a building construction project in Hong Kong. Through the vignette, we demonstrate the applicability of the concept in construction project settings in relation to the proposition. Based on the findings, we put forth a theoretical framework of the social embeddedness approach to project organizing.*

**Keywords:** Social capital; Construction project organization; Relational paradigm

# 1. Introduction

A project comprises of a collection of human operators that are engaged in a nexus of activity through which the operators could collaborate to achieve their objectives. Because project participants have to interact among themselves in the conduct of these activities, a project can also be viewed as a sequence of events the dynamics of which are contingent upon the quality and characteristics of the relationships and interactions of those participants (Jones and Lichtenstein, 2008). Here, the project affairs are highly influenced by both the structure of the relations and the collective rules of collaboration. Project organizations, viewed this way, are characterized by the network of relationships that shape the network activities, the evolution of these activities, and the relationships among the participants (Doreian, 2002; Kenis and Knoke, 2002).

The collective features of the social relations of participants within the social sphere (e.g. quality of relations, structural features of ties) can be used to facilitate actions among them as the ties that connect them are conduit and platform for information and influence resources to be transferred and manifested. This represents the basic utilitarian concept of social capital. However, extant discourse of organizational social capital has largely been concentrated on permanent organizational settings. But because such a utilitarian concept should be free from organizational-setting specific application, and we would argue that with the construction project peculiarities, social capital may be more relevant to project organizing. In this paper, we explore the concept's applicability in the more volatile and dynamic construction project organization. We aim to explore the forms and manifestation of social capital in project settings. We accomplish these tasks by a vignette derived from a case study of a building construction project in Hong Kong. The vignette allows us to present a part of the full-scale case study that is directly relevant to the research objective hence enabling a more focused discussion on the phenomenon. We first provide a brief overview of social capital in the next section, follow by the development of a proposition, the research methods, the vignette proper, and the formulation of a theoretical framework informed by the literature and the vignette.

## 2. Social capital in construction projects

Construction project is a network-based organization that consists of a variety of participants with different expertise all taking part in the project at various times (Styhre *et al.*, 2004). The relationships among the participants, specifically, the goodwill generated among them (Adler and Kwon, 2002), represents social capital of the group. The project participants and the relationships among them form a project social network. It is this social network that allows resources to be accessed giving rise to project social capital. Although a temporary system, a project organization is nevertheless characterized by factors that are relevant to the development of social capital. First is the characteristic of interdependence. Interdependence arises from the interconnections between decisions and actions of project participants. Because of interdependence, participants need to rely on others to complete collective tasks. This high level of mutual interdependence provides and promotes social capital by increasing the opportunity of participants' interactions (Nahapiet and Ghoshal, 1998).

The second factor is the intensity of interaction. Similar to permanent organization, project organization provides a community, a space for bringing together project participants for actions and interaction (Nahapiet and Ghoshal, 1998). Project organization creates a range of contexts and occasions for the interactions of participants. It is through these interactions project organization provides opportunity for sustained socialization which is essential for the creation and maintenance of networks and social relationships (Nahapiet and Ghoshal, 1998) – the bedrock of social capital. However, because project organization is established for a specific purpose to be realised in a definite time, the intensity and dynamics of the social interactions in project organization are much higher than that in the permanent organization, therein lie the increased importance of social capital. In project organization, both the participants and their organization are entities in their own right that possess unique dynamics and operational logics. Because project works are largely context-specific, process- and action-based, the group dynamics are likely to be the result of participants' interactions and the patterns of social relations established by the participants (cf. Rizova, 2007). Under these circumstances, social capital that is engendered among the participants will likely affect the group performance, and ultimately the project performance.

Third, in project organization, participants have diverse specialties, facing tensions between autonomy requirements and simultaneous embeddedness within both their own parent and project organizational settings, and needing to constantly adapt to the emergent situations consequential of on-going flux and fluidity of operational circumstances (Gode-Sanchez, 2010). As projects – network type organizations – often lack a central authority (Poldony and Page, 1998), the coalition formed by project participants requires social mechanisms such as trust and reciprocity to function effectively (Jones *et al.*, 1997; Powell, 1991). There is an acute need for participants to uphold a sense of obligation among themselves instead of taking advantage of the trust prevalent within the group.

Finally, there is the demarcation of social boundary of project organization. Although permeable to some extent, project organization nevertheless has social boundary that separate members from non-members (cf. Bourdieu, 1986). In this sense, project organization can be considered as “closed.” This closure is conducive to the development of norms, identity, or even trust among the participants. It is this feature of closure that leads especially to the development of the cognitive and relational type of social capital (Nahapiet and Ghoshal, 1998; Coleman, 1990).

In sum, in project organization, the invocation and utility of the social capital concept are highly relevant. Social capital among participants is necessary because project organizational processes are socially constituted. Participants negotiate, refine, and achieve a shared understanding through interactions, sense-making and collective learning (Ayas and Zeniuk, 2001). Under the volatile and dynamic project environment where the practical norms governing the joint actions among participants are unstable consequential of the continuous flux of changes effectuated by the local situation at a particular time (Cicmil and Marshall, 2005), team members will need to network with a range of other participants to make sense of project organizational processes (Newell *et al.*, 2004). Network facilitates these processes through the transfer of ideas. Project organizational network becomes a conduit for processing and moving this knowledge.

### 3. The three dimensions of social capital

We adopt the three-dimensional conception of social capital propounded by Nahapiet and Ghoshal (1998) in the present study for its applicability in organizational settings (Bolino *et al.*, 2002; Koh and Rowlinson, 2011; Maurer and Ebers, 2006) - the structural, cognitive, and relational dimensions. The *structural dimension* concerns the properties of social system and the network relations as a whole. It refers to the impersonal configuration of linkages between persons or social units. An important facet under this dimension is the network ties between project participants. It concerns the presence or absence of ties between participants (Nahapiet and Ghoshal, 1998), and the extent to which participants are connected (Bolino *et al.*, 2002). Another facet is the appropriable organization which deals with the existence of networks created for one purpose that may be used for other purposes (Coleman, 1988; Nahapiet and Ghoshal, 1998). Generally, these connections among participants significantly influence information (Krackhardt and Hanson, 1993) and influence-based resources (e.g. legitimacy and authority) (cf. Adler and Kwon, 2002; Poldony and Page, 1998) transfer among them, and the execution of organizational activities (Shah, 2000). As transfer channel (Bresnen *et al.*, 2005), structural dimension represents a conduit that enables value generation for the project group. The conduit connects the group members while the value generated provides the reason for members to engage and invest in social relations. In this sense, the structural dimension provides an opportunity for the transaction of social capital (Adler and Kwon, 2002).

The *cognitive dimension* refers to those aspects that provide shared representations, interpretation, and the system of meaning among group members (Nahapiet and Ghoshal, 1998). Cognitive dimension, hence, concerns the extent to which members in a social group share a common understanding or perspective (Bolino *et al.*, 2002). It refers to the similarities of group members' cognitive schemes (Maurer and Ebers, 2006). This shared aspect of social capital provides group members with a common perspective which enables the development of similar perception and interpretation on the events encountered within the group. This shared perspectives, interpretations, and orientations facilitate the exchange of information (cf. Boland and Tenkasi, 1995). When manifested as shared goals, the cognitive dimension facilitates a shared approach to accomplish group tasks. In project organization, because participants often have different goals, shared interpretation enables more effective negotiation among participants. In addition, this shared aspect of social capital provides a sense of belonging and identity (Bresnen *et al.*, 2005) which may be useful in directing and focusing efforts of project participants with disparate objectives.

The *relational dimension* describes the personal relationships people developed among themselves through the history of interactions (Granovetter, 1992) (no less in construction project settings). It concerns interpersonal connections that are affective in nature (Krackhardt, 1992). It focuses on the quality or nature of those connections or relationships in terms of trust, intimacy / closeness, liking, etc. (Storberg-Walker, 2009; Bolino *et al.*, 2002), and reciprocity and emotional intensity (cf. Granovetter, 1973). Among the various facets of relational dimension, trust has received much attention in organizational research (cf. Yang and Farn, 2009; McEvily *et al.*, 2003a). Trust is needed for participants to work together in a project (cf. Leana and Van Buren, 1999). High degree of interdependence implies that project participants must exchange information and rely on other participants to accomplish collective task. However, each participant does not have complete control

over, nor is in the position to fully monitor others' behaviors. To exacerbate the situation, participants cannot assume that their interests and goals are fully aligned (McEvily *et al.*, 2003b). As such, each participant "controls" the other's fate thereby imposing the same threat to one another. These requirements of control and threat give rise to the need for participants to expect and be receptive to trust and trustworthy behaviors (Meyerson *et al.*, 1996). Under these circumstances, trust is required as an input condition in project to stimulate supportive activities in the uncertain or risky project settings (Luhmann, 1988).

#### **4. A proposition**

Preceding discussions imply that social aspects are crucial in project organization because the type of actions involved is usually non-routine, dynamic, and emergent. To coordinate the actions of various constituents, project participants have to act under the conditions of ambiguity. Participants must negotiate a shared understanding of the contexts they are in (a cognitive dimension of social capital), look for the sources of information within the network of participants (a structural dimension of social capital), decide who to be trusted and depended on (a relational dimension of social capital), develop rules and norm for actions (cognitive and relational dimensions), and then distribute work among themselves and monitor the progress toward the goals (cf. Hackman and Morris, 1978). For the accomplishment of these goals, the social structure, the roles, norms, and trust – i.e. the social capital – is critical for it provides the foundation for ongoing interaction of participants (cf. Orlikowski, 2002). Because purposive interaction among project participants can be conceptualized in the present study as project organizational processes (e.g. adaptation, integration, cooperation, etc.) social capital can be seen to serve as a substrate on which these interactions take place (cf. Nohria and Eccles, 1992). The network of relationships among the project participants may offer mutual support for the cultivation of reflective practices. Through a complex process, social capital is created and sustained. Hence, because the concept of social capital represents primordial features of social activities, it provides the conditions necessary for project organizational processes to take place, and those processes, in turn, contributes to project success. In addition, to the extent that project participants can rely on project organizational control and role-based coordination for task performance and the social capital that resides with participants may lie dormant unless actively seek out and act upon, the impact of social capital on project outcome is likely to be indirect. That is, project success is influenced more directly by the participants' interaction in terms of for example, integration and cooperation, and these interactions are influenced by the relationships and social structure established within the project organization. In essence, our proposition is that: *the impact of social capital on project success is mediated by project organizational processes.*

#### **5. Research methods**

We examine the preceding proposition with a vignette derived from a case study of a building construction project in Hong Kong – the *Project Housing*. We use the peculiar structural form prevalent in the project – known simply as the "*working sessions*" – to explore the issues. Although the vignette utilizes only parts of the case study data, but because it is possible to examine the contextual conditions in which project participants encounter within project organization with case

study (Yin, 2003), the vignette does allow simultaneous in-depth understanding of the effects of social capital and a broad understanding of related issues, processes, and dynamics of project team interactions. The approach also illuminates the process oriented and temporally bounded phenomenon (Molina-Azorin, 2011). The use of case study to explore organizational social capital is appropriate. Previous studies had adopted the design to study the phenomenon in the context of knowledge management in construction firms (Bresnen *et al.*, 2005; Styhre, 2008).

We adopted the strategies of triangulation of data sources, prolonged engagement, and persistent observation for data collection. Multiple data types were used including archival data, observations, and interviews (recorded and transcribed). In our explorations, we asked informants on their ideas of the applicability and manifestations of social capital in project settings, and how these impact upon project organizational processes and outcomes. Other data collection modes were also guided by the same line of enquiry. The review of archival records and interviews (and subsequent discussions of results) with the core project team members were conducted from May 2007 to May 2008, and observations were conducted at earlier times when the research team attended the site meetings and visits. 13 interviews were conducted with personnel from both the client and contractor organizations. We adopted thematic analysis for the study (Ritchie *et al.*, 2003). Data from various sources were compared, contrasted, and inductively analyzed into forming indexes. Themes were formed from indexes sharing similar underlying concepts. The labels for indexes and themes were drawn from both the data and literature. Explanations were developed by linking themes and indexes through the search of possible underlying logics and comparing the schemes with findings of other studies. This way, theoretical validity of the study is ensured.

## 6. A vignette of the “working sessions”

### 6.1 Brief project overview

An overview of *Project Housing* is given in Table 1.

Table 1: Overview of Project Housing

<i>Client type</i>	Government department	<i>Project features:</i> The Phase 4 (of six phases) of public rental housing project involving the construction of three 41-storey blocks of about 2,300 domestic flat units, with auxiliary civil and structural works Publicly high visibility project with novel MGMP procurement arrangement Full compliance of the Independent Checking Unit (ICU) with the contractor’s designs Numerous new initiatives that render the project a “research project” – new designs, administrative procedures, etc.
<i>Contract sum</i>	HK\$434 million (initial value) (US\$1 = HK\$7.8)	
<i>Contract period</i>	36 months	
<i>Contract type</i>	Traditional design-bid-build, with six work packages under modified guaranteed maximum price (MGMP) arrangement with some contractor’s design elements	
<i>Project core teams</i>	Two primary teams: the client (as both designer and project manager), and the contractor	

The contractor of the project was technically and managerially capable and cooperative with the client. The incorporation of contractor’s design elements into the project called for full compliance to

the Independent Checking Unit's (ICU) requirements. Handling the ICU submissions and approvals had become significant affairs in *Project Housing* so much so that the project architect had resorted to convening frequent design meetings known as the "working sessions" by the team members to manage the design-related issues and complications. The working session is a special arrangement for parties "to discuss the design and the site construction sequence and the daily administration works. They (referring to the project core teams) can discuss all the requirements at the workshop and prepare the drawings accordingly. This has in fact smoothened the process" (the client project senior architect, SA). Generally, in *Project Housing*, the new technical and the related managerial processes intertwined and posed challenges and complexity in project organizing for all parties in the project.

## **6.2 Structural dimension**

In terms of the working sessions, the structural form was manifested in the internal network that interweaved the client, the main and the sub-contractors project personnel. For the client and the main contractor teams, multi-connections were formed in a closed network that facilitated information transfer both laterally and vertically across the hierarchies. An intriguing effect is the existence and effects of informal grouping that emerged from the working sessions. As a result of the amount of discussions that were needed in the design development activities, design meetings were organized with high frequency and intensity among a wide range of project participants spanning various hierarchies. The arrangement is informal. The project architect (PA) explained: "They would bring the drawings to the meetings and then architects and engineers would be sitting there to resolve the issues. Every issues, the design issue, the site issue, contract issue, everything can be discussed." This form of interaction brought about speedier issues resolution because the arrangement "helps to reduce unnecessary corresponding work" (PA). In addition, the intensive interactions of all parties (including the confiding of each other's constraints) and the willingness of all to collectively resolve the issues had fostered the core teams' group cohesion and trust. The PA proclaimed that by engaging in such high intensity interaction "we build up trust very efficiently because if we talk with the contractor, we understand that he is really thinking about how to resolve the issue for you and how to cooperate with you to do things better, you would trust them."

## **6.3 Cognitive dimension**

The cognitive dimension can be encapsulated in the various forms of shared understanding that had emerged among participants. The forms included the common goals, the appreciation of each other's constraints, and project requirements. In *Project Housing* the core teams' common goals were timely completion and meeting project budget. However, coupled with the appreciation of other's constraints, together with the need to face the uncertainty and increased workloads for all parties, a sense of solidarity within the core teams had emerged. This atmosphere had instilled an increased sense of team cohesion and willingness to share responsibilities among the members. The late issuance of drawings by the client design team had been met by the main contractor with some re-planning works and with the corresponding award of time extension from the client – a mutual accommodation. The contractor's project manager (PM) made the point: "So we need to have a true partnering. No matter the problem is raised by any parties, we need to tackle it together to streamline

and to minimize the time consumed to resolve the problem!” The core team became more cooperative through appreciating and accommodating each other’s difficulties.

#### **6.4 Relational dimension**

The forms of relational dimension in *Project Housing* include team spirit, solidarity (as identified earlier), commitment, and trust among the core teams. Collegial spirit was highly evident in the project. Starting from the initial traditional role- and contract-based interactions, the relationships among the core team developed into a more humanistic nature through the socialization periods. After experiencing the mechanistic arrangement for some time, a less contractual approach emerged. The client SA recalled: “For a certain period of time, they [referring to the core teams from both sides] still get some kind of human relationships, and this is important and, under normal situations, we welcome this sort of arrangement because you are not only client-contractor relationships. We work in team so we consider ourselves as team members with common goal.” It was observed that this collegial team spirit helped smoothening the work processes and communication. Along this line, the emergence of solidarity resulted from the need to deal with uncertainty and the increased workloads in relation to the novel procurement system and the string of new initiatives. Here, both teams were thrown into a common situation. This collective involvement had sensitized the members into experiencing a more acute awareness of the responsibilities bestowed upon them. The solidarity had culminated in the various episodes of ICU submissions and the client’s supporting the main contractor initial failure with ICU’s approval and later re-submissions. This solidarity had engendered a sense of support for the broad values (of getting ICU approvals and related project issues) and the cultivation of a sense of mutuality among members (Smith 2009).

#### **6.5 Social capital and project organizational processes**

The idea that social capital is foundational to the case projects participants’ interactions, and by extension the project organizational processes among them, was pervasive among informants. As observed, social capital, as manifested mostly in good relationship and trust among the project participants facilitated interactions. This facilitation was realized through the adoption of a more trusting approach in certifying in-process work outputs. The contractor’s building services coordinator of *Project Housing* exemplified the situation as: “The social capital, yeah, you talked about the trust and the relationship, and I would say that it would affect the project most because if we don’t have the mutual trust between us and the client department, then it’s very hard to carry out the work. If they don’t have trust on us, they would probably inspect every details and it will affect the project progress.” More generally, social capital provided the basis of positive interactions among project participants. It served to reduce or even remove the barriers between the interacting parties.

However, while acknowledging the foundational thesis of social capital in project parties’ interactions, some informants held a somewhat conservative view on this relational asset. With these informants, their experience was that social capital was less reliable. This point was made by the client’s building services engineer that in the government projects, project officials could not rely on relationships in getting the works done. Rather, they would choose to rely on project organizational processes for the “timely completion of the works” (client’s building services engineer).



Notwithstanding the fact that it was the government officials who made those assertions and that they were subjected to the transparency requirements that somehow constrained their reliance on relationships, this line of argument does imply that social capital was indeed relegated to the background to facilitate project processes, and those processes were more directly contributory to the project outcomes.

## 7. A framework

Based on the analyses of the vignette, a social capital-based model of construction project management can be proposed. The model is depicted in Figure 1.

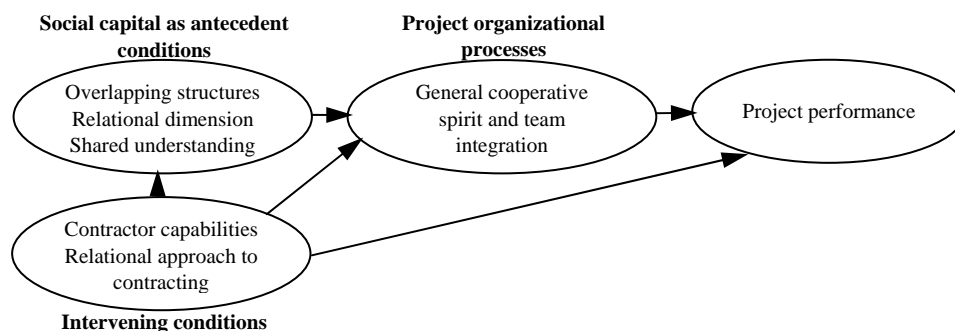


Figure 1: The social capital approach to construction project management

### 7.1 Social capital as antecedent

The phenomenon of “working sessions” has highlighted possible project structural design that entwines both the key personnel’s human and social capital (e.g. the client PA and the contractor PM). Here, the human capital that embodied in the key personnel (e.g. technical and managerial capabilities) can be better exploited by the virtual of them occupying both advice and managerial networks, and simultaneously occupying the key positions in both informal and formal structures. In this way, their roles and responsibilities are in line with their centrality in technical- and managerial-advice networks. In terms of relational dimension, an important way is to create a social climate that promotes shared cognition among project participants – the extent to which participants know, recognize, and consider one another’s needs and goals (Granovetter, 1992). As revealed in the vignette, this shared cognition that is manifested as empathy, acknowledging other’s constraints, common goals, the alignment of understanding of the project requirements all provide a condition whereby participants show willingness to be accommodative that helps to brings about joint efforts.

### 7.2 Project organizational processes

The facilitative effect of social capital can be realized as the results of the benefits that can be derived from the configuration of project social capital. The combination of the three elements of social capital as observed here all help in achieving greater efficiency in the coordination of project task interdependencies (Coleman, 1990) by facilitating access to information that helps speeding up

information exchange and processing (Gargiulo and Benassi, 1999), and promoting respect, trust, and trustworthiness between participants (Lin, 2001; Bourdieu, 1986).

### **7.3 Intervening conditions**

Although the antecedent (in project social capital) and mediational variable (in project organizational processes) affect project performance, as revealed in the vignette however, the existence of other factors cannot be ruled out. These factors are encapsulated in the intervening conditions – contractor capabilities and relational approach to contracting. As revealed by the vignette and in line with literature, two types of contractor’s capability are relevant: technical and organizational competencies (cf. Isik *et al.*, 2009; Lokshin *et al.*, 2009). The vignette contractor’s use of the new precast façade construction and the achievement of the 6-day-per-floor cycle with that technology had all contributed to time achievement of the project. These technical competencies – a synergistic combination of construction methods, technology, and experienced technical staffs – have tremendously contributed to project performance. With respect to organizational competency, this capability is reflected through the contractor and client project teams in effective and efficient work organization. However, to realize this team capability, project team needs to be cohesive to ensure success of teamwork. Cohesiveness among team members can be achieved through a structural form that allows open communication between team members, good coordination of tasks, members individual’s contribution, and the promotion of mutual support within the team (and from the parent company) (cf. Hoegl and Gemuenden, 2001). As revealed in the vignette, the interwoven formal and informal project structures had enabled high level of cohesiveness between both teams.

Another intervening condition is the effect of contract in project organizing - specifically, the extent to which contract can be used to promote collaborative working. In this situation, if the utility of contract is ubiquitous, and to the extent that contract serves controlling and coordinating functions, contract should be very detailed and should focus more on the positive provisions – in the line of what the parties want to collectively achieve and how – rather than solely on the negative safeguards. As can be inferred from the vignette, contract, in this manner, serves as a technical aid in the management of the relationships of the contracting parties, and is now placed in the social contexts under which it is used (Woolthuis *et al.*, 2005). This contextualisation of contract is an attempt to make an otherwise seemingly detached document into one that is more aligned with the world of actual contracting practices (Cheung *et al.*, 2006).

## **8. Conclusions**

In this paper, we have demonstrated the applicability of the concept of social capital in construction project settings by delineating the manifestations of the forms and effects of social capital on project organizational processes with the use of a vignette. Although the atypical nature of the “working sessions” renders the invocation and explication of social capital concept more pronounced, the evidence have nevertheless pointed to the relevance of the concept in construction project settings. To this end, a few project managerial implications can be suggested. Although social capital of project organization is largely emergent and self-organizing, as revealed from the vignette and in line with

literature, we suggest project leader to take a more balanced view of controlling and allowing some autonomy (Agterberg *et al.*, 2010). The intervention along this line of thought, and in terms of the three social capital elements can be the encouragement of personnel in the formal strategic project structure to engage in informal interactions, the promotion of shared understanding and trust by exercising positive leadership.

## 9. References

- Adler, P.S. and Kwon, S.W. (2002) Social capital: prospects for a new concept. *Academy of Management Review*, **27**(1), pp. 17-40.
- Agterberg, M., Van Den Hooff, B., Huysman, M. and Soekijad, M. (2010) Keeping the wheels turning: the dynamics of managing networks of practice. *Journal of Management Studies*, **47**(1), pp. 85-108.
- Ayas, K. and Zeniuk, N. (2001) Project-based learning: building communities of reflective practitioners. *Management Learning*, **32**(1), pp. 61-76.
- Boland, Jr. R.J. and Tenkasi, R.V. (1995) Perspective making and perspective taking in communities of knowing. *Organization Science*, **6**(4), pp. 350-372.
- Bolino, M.C., Turnley, W.H. and Bloodgood, J.M. (2002) Citizenship behaviour and the creation of social capital in organizations. *Academy of Management Review*, **27**(4), pp. 505-522.
- Bourdieu, P. (1986) The forms of capital. In: Richardson, J.G., ed. *Handbook of Theory and Research for the Sociology of Education*. New York: Greenwood, pp. 241-258.
- Bresnen, M., Edelman, L., Newell, S., Scarbrough, H. and Swan, J. (2005) Exploring social capital in the construction firm. *Building Research and Information*, **33**(3), pp. 235-244.
- Cheung, S.O., Yiu, K.T.W., and Chim, P.S. (2006) How relational are construction contracts? *Journal of Professional Issues in Engineering Education and Practice*, **132**(1), pp. 48-56.
- Cicmil, S. and Marshall, D. (2005) Insights into collaboration at the project level: complexity, social interaction and procurement mechanisms. *Building Research and Information*, **33**(6), pp. 523-535.
- Coleman, J.S. (1988) Social capital and the creation of human capital. *American Journal of Sociology*, **94**(Supplement), pp. S95-S120.
- Coleman, J.S. (1990) *Foundations of Social Theory*. Cambridge, MA: Harvard University Press.
- Doreian, P. (2002) Event sequences as generators of social network evolution. *Social Networks*, **24**(2), pp. 93-119.

- Gargiulo, M. and Bernassi, M. (1999) The dark side of social capital. In: Leenders, R.T.A.J. and Gabbay, S.M., eds. *Corporate Social Capital and Liability*. Boston: Kluwer, pp. 298-322.
- Gode-Sanchez, C. (2010) Leveraging coordination in project-based activities: what can we learn from military teamwork? *Project Management Journal*, **41**(3), pp. 69-78.
- Granovetter, M.S. (1973) The strength of weak ties. *American Journal of Sociology*, **78**(6), pp. 1360-1380.
- Granovetter, M. (1992) Problems of explanation in economic sociology. In: Nohria, N. and Eccles, R.G., eds. *Networks and Organizations: Structure, Form, and Action*. Boston, MA: Harvard Business School Press, pp. 25-56.
- Hackman, J.R. and Morris, C.G. (1978) Group tasks, group interaction process, and group performance effectiveness: a review and proposed integration. In: Berkowitz, L., ed. *Group Processes*. New York: Academic Press, pp. 1-55.
- Hoegl, M. and Gemuendden, H.G. (2001) Teamwork quality and the success of innovative projects: a theoretical concept and empirical evidence. *Organization Science*, **12**(4), pp. 435-449.
- Isik, Z., Arditi, D., Dikmen, I. and Birgonul, M.T. (2009) Impact of corporate strengths/weaknesses on project management competencies. *International Journal of Project Management*, **27**(6), pp. 629-637.
- Jones, C., Hesterley, W.S. and Borgatti, S.P. (1997) A general theory of network governance: exchange conditions and social mechanisms. *Academy of Management Review*, **22**(4), pp. 911-945.
- Jones, C. and Lichtenstein, B.B. (2008) Temporary inter-organizational projects: how temporal and social embeddedness enhance cooperation and manage uncertainty. In: Cropper, S., Ebers, M, Huxham, C. and Ring, P.S., eds. *The Oxford Handbook of Inter-Organizational Relations*. Oxford: Oxford University Press, pp. 231-255.
- Kenis, P. and Knoke, D. (2002) How organizational field networks shape interorganizational tie-formation rates. *Academy of Management Review*, **27**(2), pp. 275-293.
- Koh, T. Y. and Rowlinson, S. (2011) Relational approach in managing construction project safety: A social capital perspective. *Accident Analysis Prevention*, *Article in Press*.
- Krackhardt, D. (1992) The strength of strong ties. In: Nohria, N. and Eccles, R. G., eds. *Networks and Organizations: Structure, Form, and Action*. Boston, MA: Harvard Business School Press, pp. 216-239.
- Krackhardt, D. and Hanson, J.R. (1993) Informal networks: the company behind the chart. *Harvard Business Review*, **71**(4), pp. 104-111.

- Bolino, M. C., Turnley, W. H. and Bloodgood, J. M. (2002) Citizenship behaviour and the creation of social capital in organisations. *Academy of Management Review*, **27**(4), pp. 505-522.
- Leana, C.R. and Van Buren, H.J., III. (1999) Organizational social capital and employment practices. *Academy of Management Review*, **24**(3), pp. 538-555.
- Lin, N. (2001) *Social Capital: a Theory of Social Structure and Action*. New York: Cambridge University Press.
- Lokshin, B., Van Gils, A. and Bauer, E. (2009) Crafting firm competencies to improve innovative performance. *European Management Journal*, **27**(3), pp. 187-196.
- Luhmann, N. (1988) Familiarity, confidence, trust: problems and alternatives. In: Gambetta, D., ed. *Trust: Making and Breaking Cooperative Relations*. New York: Blackwell, pp. 94-108.
- Maurer, I. and Ebers, M. (2006) Dynamics of social capital and their performance implications: Lessons from biotechnology start-ups. *Administrative Science Quarterly*, **51**(2), pp. 262-292.
- McEvily, B., Perrone, V., and Zaheer, A. (2003a) Introduction to the special issue on trust in an organisational context. *Organisation Science*, **14**(1), pp. 1-4.
- McEvily, B., Perrone, V., and Zaheer, A. (2003b) Trust as organising principle. *Organisation Science*, **14**(1), pp. 91-103.
- Meyerson, D., Weick, K.E., and Kramer, R.M. (1996) Swift trust and temporary groups. In: Kramer, R.M. and Tyler, T.R., eds. *Trust in Organizations: Frontiers of Theory and Research*. Thousand Oaks, CA: Sage Publications, pp. 166-195.
- Molina-Azorin, J. F. (2011) The use and added value of mixed methods in management research. *Journal Mixed Methods Research*, **5**(1), 7-24.
- Nahapiet, J. and Ghoshal, S. (1998) Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review*, **23**(2), pp. 242-266.
- Newell, S., Tansley, C. and Huang, J. (2004) Social capital and knowledge integration in an ERP project team: the importance of bridging and bonding. *British Journal of Management*, **15**(Supplement 1), pp. S43-S57.
- Nohria, N. and Eccles, R. (1992) Face-to-face: making network organizations work. In: Nohria, N. and Eccles, R. G., eds. *Networks and Organizations: Structure, Form, and Action*. Boston, MA: Harvard Business School Press, pp. 288-308.
- Orlikowski, W.J. (2002) Knowing in practice: enacting a collective capability in distributed organizing. *Organization Science*, **13**(3), pp. 249-273.

- Poldony, J.M. and Page, K.L. (1998) Network forms of organization. *Annual Review of Sociology*, **24**, pp. 57-76.
- Powell, W.W. (1991) Neither market nor hierarchy: network forms of organization. In: Thompson, G., Frances, J., Levacic, R., and Mitchell, J. eds. *Markets, Hierarchies and Networks: the Coordination of Social Life*. London: Sage Publications, pp. 265-276.
- Ritchie, J., Spencer, L., and O'Connor, W. (2003) Carrying out qualitative analysis. In: Ritchie, J. and Lewis, J. eds. *Qualitative research practice: a guide for social science students and researchers*. London: Sage Publications, pp. 219-262.
- Rizova, P.S. (2007) *The Secret of Success: the Double Helix of Formal and Informal Structures in an R&D Laboratory*. Stanford, CA: Stanford Business Books.
- Shah, P. P. (2000) Network destruction: the structural implications of downsizing. *Academy of Management Journal*, **43**(1), pp. 101-112.
- Smith, J. (2009) Solidarity networks: What are they? And why should we care? *The Learning Organization*, **16**(6), 460-468.
- Storberg-Walker, J. (2009) Heterodox economics, social capital, and HRD: moving beyond the limits of the neoclassical paradigm. *Human Resource Development Review*, **8**(1), pp. 97-119.
- Styhre, A. (2008) The role of social capital in knowledge sharing: the case of a specialist rock construction company. *Construction Management and Economics*, **26**(9), pp. 941-951.
- Styhre, A., Josephson, P-E. and Knauseder, I. (2004) Learning capabilities in organizational networks: case studies of six construction projects. *Construction Management and Economics*, **22**(9), pp. 957-966.
- Woolthuis, R.K., Hillebrand, B. and Nooteboom, B. (2005) Trust, contract and relationship development. *Organization Studies*, **26**(6), pp. 813-840.
- Yang, S-C. and Farn, C-K. (2009) Social capital, behavioural control, and tacit knowledge sharing – a multi-informant design. *International Journal of Information Management*, **29**(3), pp. 210-218.
- Yin, R. K. (2003). *Case Study Research: Design and Methods*, 3rd Ed., Thousand Oaks, California: Sage Publications.