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Boundary object efficacy: The mediating role of boundary objects on task conflict in global virtual project networks

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Abstract

As project-based industries such as Architecture, Engineering and Construction globalize, workers require strategies for managing conflict in virtual project networks. Our aim in this paper is to explore the efficacy of boundary objects as tools to mediate conflict in culturally-diverse, distributed networks. Based on annotated recordings for eight networks of graduate student engineers, we demonstrate that different interactional patterns between distributed engineers and boundary objects can lead to a reduction in conflict duration. We did not observe higher levels of conflict for global compared to domestic networks, but did discover that, regardless of network diversity, networks that interacted with the boundary objects in certain ways were able to identify and resolve conflicts more quickly. Our findings have important implications for theories of conflict management and boundary object efficacy in addition to practical applications to support conflict management in global virtual project networks.

Keywords: Boundary objects; Conflict management; Culture; Global; Global projects; Global virtual project networks; Project networks; Virtual teams

1. Introduction

Project-based industries such as Architecture, Engineering and Construction are becoming more globalized (Messner, 2008) as firms seek to access specialized knowledge from around the world (MacDuffie, 2007). Globally distributed specialists are often assembled by firms into temporary project networks (Boland et al., 2007; Hinds et al., 2011; Taylor and Levitt, 2007) where complex projects are coordinated between firms (MacDuffie, 2007). For globalized firms, successful project outcomes require effective work interactions that can facilitate the transfer of geographically distributed information and knowledge.

Global work is typically enacted in virtual networks (Hinds et al., 2011), or sets of teams from different firms that are primarily supported in their work interactions through technological mediation (Chinowsky and Rojas, 2003; DeSanctis and Monge, 1999). Virtual networkers may not be familiar with their geographically distributed co-workers (Jarvenpaa and Leidner, 1999) and are typically restricted in any opportunity for face-to-face interaction (Bell and Kozlowski, 2002) although such opportunities can moderate the negative effects of distribution on performance (Kirkman et al., 2004; Ocker et al., 1998). The range of attitudes about geographically distributed work (Lee-Kelley, 2006) suggests that the geographical boundary between virtually networked teams poses challenges to establishing trust, cohesion and group identity (Kirkman et al., 2002) in addition to a shared interactional context, which can lead to conflict (Hinds and Mortensen, 2005).

Global virtual networks are culturally diverse (Jarvenpaa and Leidner, 1999; Kristof et al., 1995) in addition to being geographically distributed. As with geographical distribution, cultural diversity can be a boundary to effective work processes. It can hinder knowledge transfer in global networks (Javernick-Will

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and Levitt, 2010) and, because cultural values influence decision making processes (Adler, 1997; Hofstede, 1980), global networks often find cooperative decision making difficult (Kirchmeyer and Cohen, 1992; Watson et al., 1993). In cases where cooperative decision making is difficult, conflict may be more likely to occur.

Conflict is more common in global virtual networks because it is more likely to occur in culturally diverse (Liljegren and Zander, 2011; Mahalingam and Levitt, 2007; Nayak and Taylor, 2009; Orr and Scott, 2008) and geographically distributed settings (Hinds and Mortensen, 2005). Global virtual networks "seem to perform poorly in maintaining effective cross-functional communication and leveraging the benefits offered by a diverse group of nationalities" (Daim et al., 2012, p. 207), which suggests that the conflict in these networks is, in part, based on ineffective communication strategies. Thus, as global virtual networks are likely sites of conflict, their performance is typically observed to be inferior to face-to-face domestic networks, which presents critical decisions for stakeholders as the risks associated with poorly performing virtual networks (Chidambaram and Jones, 1993; Lurey and Raisinghani, 2001; Montoya-Weiss et al., 2001; Straus, 1996) may outweigh the savings associated with keeping workers in situ.

Thus, effective strategies for managing conflict in global virtual networks are essential components to support the globalization and virtualization of project-based industries. Our motivation for conducting the research described in this paper is to present a novel approach to supporting the identification and resolution of conflict in global virtual project networks. To this end, we start by framing conflict as a process and discuss how shared objects (e.g. building information or organizational models) can be potentially well-suited to mediate conflict in these settings. We then describe the experimental design that allowed us to study the use of objects as conflict mediators and discuss the findings from our experiments. Finally, we note the theoretical implications of our research and provide suggestions for how our findings can aid in the virtualization of project-based industries.

2. Background

To provide the theoretical frame for our investigation of how objects can be used to mediate conflict in global virtual project networks, we start by providing an overview of previous research on conflict in Architecture, Engineering and Construction and then focus on conflict management as a process. By examining conflict as a process, we are able determine when and how distributed workers engage with objects in order to understand why they are or are not effective as conflict mediators.

2.1. Conflict in global virtual project networks

Conflict is a (perceived) incompatibility between two independent groups or individuals (Putnam and Poole, 1987). In a work setting, conflict can involve two or more perspectives that are presented as solutions to a problem. For complex projects with a series of interdependent and reciprocal workflows, conflicts surrounding one aspect of a task must often be resolved in order for work to proceed.

Research on conflict has primarily focused on the implications of different types of conflict on work processes. For example, Jehn's (1997) framework distinguishes between task, relationship and process conflicts. In general, conflict can positively and/or negatively affect work (Jehn, 1995) because it is multi-dimensional (Buchanan and Huczynski, 1997). Task conflicts constitute sites where creative thinking and problem solving can emerge (Carnevale and Probst, 1998; DeDreu and Weingart, 2003), which can lead to innovation (Amason, 1996), while relationship conflicts can interfere with innovation (Mortensen and Hinds, 2001). Moreover, Pelled and Adler (1994) show that productive task conflicts can devolve into disruptive relationship conflicts if left unchecked, which can decrease the overall performance on a project (DeDreu and Weingart, 2003; Gobeli et al., 1998). As we note above, the negative aspects of conflict can be compounded in geographically distributed teams, as conflict in these settings can be difficult to isolate and manage (Hinds and Bailey, 2003; Mannix et al., 2002), particularly when cultural approaches to conflict management differ (c.f. the "confrontational style" of conflict management in Hong Kong described in Cheung and Chuah (1999) with the "cooperative" or "Islamic" style described in Randeree and Faramawy (2011)).

Maximizing the productivity of a conflict lies in its management. When left unchecked, unacknowledged and uncontrolled, conflict can interfere with project work and/or the interactional dynamics of the network. Thus, identifying and managing conflict is a critical skill, particularly for global virtual networks, because networkers need strategies to resolve conflicts when they are deemed to be destructive or minimally disruptive to expected project outcomes. Our focus in this research is on conflicts that arise during task work because we are interested in examining whether and how objects that are central to collaboration can mediate conflicts that arise during the execution of project work.

2.2. Conflict management as a process

Most research on conflict implies that its management is a process, even though the focus of the research is to distinguish the impact of conflict type on project performance. In Wall and Callister's (1995, p. 517) terms, conflict is "a process in which one party perceives that its interests are being opposed […] by another party". Their definition explicitly describes conflict as a process, although, like much of the conflict management literature, their focus is particularly on the causes and effects of conflict, rather than on the processes involved in its management. For instance, Wall and Callister (1995, p. 536), citing Deutsch (1990), note that participants in conflict must "be aware of the conflict causes and results", although they offer no guidance for participants on how to identify these antecedents and impacts. This view of conflict as process echoes Pondy's (1967) notion that the conflict process is based on antecedent conditions, emotions, perceptions and behaviors. Extending these views of the development of conflict as a process, Thibaut and Walker's (1975) model of conflict moves closer to the model we adopt as they posit a process stage,