Intergroup Collaboration: An Examination through the Lenses of Identity and IT Affordances

Research-in-Progress

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Abstract

This research seeks to increase our understanding of the relationship between IT affordances and collective identity in the context of intergroup collaboration. Particularly, we investigate the type of IT affordances (i.e., collaborative, organizational memory, or process management) that are more prone to support certain types of identities (i.e., superordinate collective identity, intergroup relational identity, or intergroup ambivalent identity) when groups need to collaborate towards the accomplishment of a common goal. We suggest three hypotheses which we plan to test via a field study within the Architecture, Engineering and Construction (AEC) industry.

Keywords: Intergroup collaboration, collective identity, IT affordance, AEC industry.

Introduction

A growing body of research in management and social-psychology focuses on the study of collaboration and intergroup dynamics (e.g. Murase et al. 2014; Thomas, Martin and Riggio 2013). Among this research, an emerging stream has considered the concept of identity, which is described as the set of meanings that define who one is as a person, as a role occupant, or as a group member (Burke 2000). Similarly, the concept of identity has been used at the collective level, to refer to the set of meanings that define a group, an organization, or multiple groups interacting together (i.e., intergroup identity). As workplaces become more globalized and diverse, and information systems are increasingly being used to support collaborative work, it becomes essential to uncover how intergroup identity promotes (or hinders) such work.

The type of identity that is manifested in the context of intergroup[1] work is influenced, among other things, by the information technology (IT) affordances that can be enacted by the involved groups (Gal, Jensen, and Lyytinen, 2014; Nach, Boudreau, and Lejeune, 2016). Indeed, the relationship between IT affordance and identity has been acknowledged before. Bernardi and Sarker (2013), for example, posited identity as the "missing link" between IT affordances and institutions. Gal and colleagues (Gal, Jensen, and Lyytinen, 2014) also suggested a relationship of influence between IT and the type of identity orientation an organization may adopt. Whereas this relationship has been proposed at a high level, it is not clear what type of IT affordances leads to different identity and promotes collaboration within the intergroup context.

The objective of this research is thus to develop an understanding of the type of IT affordances that can foster one type of identity versus another, in the context of intergroup collaboration. We ask: "How do IT affordances affect intergroup identity"? Specifically, our research seeks to investigate three types of IT affordances (i.e., collaborative, organizational memory, or process management) that are more prone to support certain types of identities (i.e., superordinate collective identity, intergroup relational identity, or intergroup ambivalent identity) in the context of intergroup collaborative projects. We suggest three hypotheses that we plan to test via a survey-based field study within the Architecture, Engineering and Construction (AEC) industry.

This paper is structured as follows. In the next section, we briefly go over the relevant literature on intergroup collaboration as considered with an identity perspective. We then discuss different types of identities and IT affordances typologies relevant to the intergroup context. Next, we suggest three hypotheses, which we seek to test in our continuing research, and later introduce our research approach.

Theoretical Background

A prerequisite to effective collaboration among groups is the development of a collective identity (Hardy, Lawrence and Grant 2005; Kilker 1999). In the IS field, little research has adopted an identity perspective in the examination of intergroup collaboration in IT-based, distributed projects. This is a missed opportunity as many IS scholars have acknowledged that the concept of identity, either at the individual, group, or organizational level, is a powerful means to explore and explain a range of social and organizational phenomena (Boudreau, Serrano and Larson 2014; Carter and Grover 2015; Stein, Galliers and Markus 2012; Whitley, Gal and Kjaergaard 2014). The intergroup level is no exception; as workplaces become more globalized and diverse, intergroup collaboration, as supported by appropriate IT, is increasingly necessary. In such context, if a collective identity is created, effective collaboration is more likely to ensue (Hardy et al. 2005; Levina 2005).

[1] Although our focus is at the intergroup level, the interorganizational level could be applied just as well throughout our research.

Collective identity in the context of intergroup work

Collective identity has been recognized as a particularly powerful lens to understand intergroup collaboration (e.g. Hogg 2015; Ibarra et al. 2014; Pittinsky 2010). Indeed, when different groups need to work together towards the accomplishment of a common goal, a collective identity is often (but not always) created, which in turn is likely to lead to a more effective collaboration (Hardy et al. 2005).

In the context on intergroup work, there are essentially three forms of identities that can be enacted, each of which impacting the extent of collaboration between groups: a *superordinate collective identity*, an *intergroup relational identity*, or an *intergroup ambivalent identity*. Below, we briefly explain each type of identities, along with their characteristics and challenges. We also provide a graphical representation for each in Figure 1.

Superordinate collective identity

A *superordinate collective identity* (Gaertner et al. 1989; van Knippenberg et al. 2004) is one that seeks to create a single, common identity uniting different groups in the pursuit of a collective goal. To achieve this, groups are encouraged to re-categorize themselves as members of the overall, common group, letting go of each group's relationship with another and minimizing each group's distinctiveness. Because a superordinate identity includes, by definition, *all* groups, its expected benefit is the reduction in intergroup tensions. However, Hogg and colleagues (2012) point to two challenges associated with this type of collective identity. The first relates to the leadership of these groups, as the leader will often be perceived as more closely aligned with one group or another. The second challenge resides in the probability of success in achieving collaboration, in that groups which are competing may be less inclined to collaborate with one another.

Intergroup relational identity

A second type of collective identity is referred to as *intergroup relational identity*. Hogg (2015) proposes that intergroup relational identity is a "self-definition in terms of one's group membership that incorporates the group's relationship with an out-group as part of the in-group's identity. It entails a sense of identity that includes, or is defined by, the collaborative relationship existing with the other groups and contributing to and promoting the overarching collective" (Hogg 2015, p. 200). This type of collective identity allows groups to maintain their distinctiveness while extending their identity to the intergroup relationships. It portrays each group as one that builds valued collaborative relationships with other groups in the pursuit of a common objective. Among the challenges associated with intergroup relational identity is the need to stimulate transference (i.e. the transfer from one intergroup relationship to another) and the creation of a boundary-spanning leadership coalition (Hogg, van Knippenberg and Rast 2012).

Intergroup ambivalent identity

As to the third type of identity, *intergroup ambivalent identity*, it is based on the concept of ambivalence identification from social psychology. Generally, ambivalence refers to a state where the simultaneous existence of opposite feelings is manifested toward an object or an experience (Sincoff 1990). From an identity perspective, ambivalence refers to a dual state of both identification (i.e., defining one as having a particular trait) and disidentification (i.e., defining one as *not* having a particular trait) (Elsbach and Bhattacharya, 2001). This dual state can be applied to traits associated with a person or a referent group. In the context of intergroup collaboration, ambivalence provides maximum flexibility, in that it can take the form of a group of people identifying with a subset of traits of another group's identity, or, of the simultaneous identification and disidentification with another group's traits (Kreiner and Ashforth 2004). We apply this concept to the intergroup context, and thus refer to an *intergroup ambivalent identity* as one where multiple groups have not established either a superordinate identity or an intergroup relational identity; rather, they have embraced conflicting identity traits with one another. For example, Group#1 may identify with Group#2 in terms of its mission, but at the same time, Group#1 and Group#2 dis-identify with one another in terms of the preferred modus operandi to achieve this mission. Assuming that both mission and modus operandi are important traits of the groups' collective identity, this one is both reinforced and undermined by these conflicting feelings, and thus does not lead to a strong collective identity. Challenges related to this type of identity include potential isolation for each group, as well as

perceptions of hypocrisy and pressures to conform (Meyerson and Scully 1995). To these challenges, we add the threat towards effective collaboration.

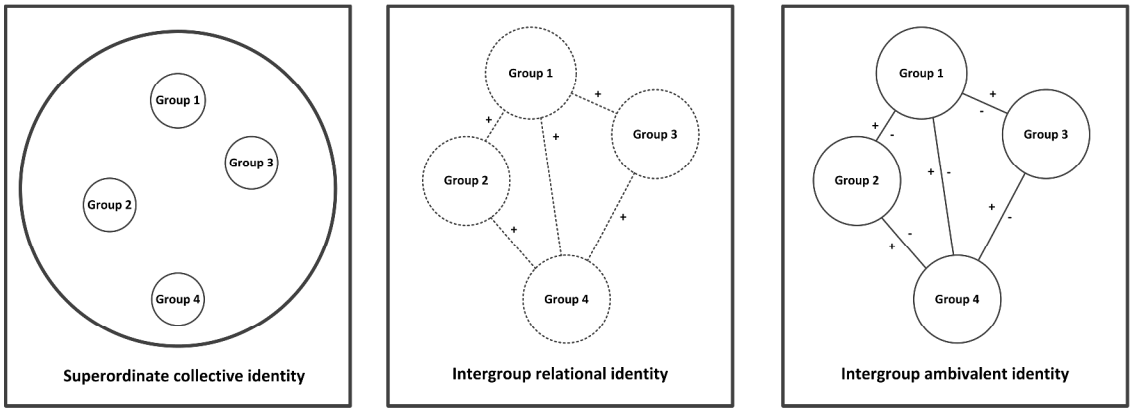

Figure 1: Representation of the three instances of collective identity

Boundary Objects and IT Affordances

Intergroup collaboration requires boundary objects, which are to be shared by multiple groups to help them bridge cognitive and practical differences so as to facilitate common understandings (Star and Griesemer 1989). An intergroup information system, for example, can be considered as a boundary object in that it can transcend group boundaries and support cooperation and coordination between the groups (Kumar and van Dissel 1996). Some scholars have explored the relationship between IT-based boundary objects and identity (e.g. Becker et al. 2013), and they have expanded our understanding of boundary objects in multiple ways. For example, Gal and colleagues (2008) looked into how changes in boundary objects influence changes in identity. Levina and Vaast (2005) also suggested such a relationship; however, their focus was not on the boundary object's inherent properties, but on the ways in which the boundary object was used. This insight leads us to consider the lens of IT affordance (Leonardi 2011) and its influence on collective identity.

IT affordance is understood in the context of material properties made available by information technologies, which properties "afford different possibilities for action based on the context in which they are used" (Leonardi 2011 p. 153). IT affordance thus incorporates not only the objective properties (or features) of an IT, but also the groups' ability and predisposition to act on these features, within their work environment (Markus and Silver 2008). The relationship between IT affordance and identity has been acknowledged before. Bernardi and Sarker (2013), for example, posited identity as the "missing link" between IT affordances and institutions. Also, some scholars (e.g., Gal, Jensen, and Lyytinen 2014; Nach, et al. 2016) have recently suggested a relationship of influence between IT affordances and identity in the context of intergroup work.

Chatterjee and colleagues recently suggested three core, generic IT affordances that can be exhibited by organizations (Chatterjee et al. 2015). We argue that these core IT affordances can be deployed just as well in an intergroup context. These are: (1) *collaborative affordance*, emphasizing the use of an IT-artefact to instill cooperation across groups; (2) *organizational memory affordance*, underlining the use of IT-artefact to create, store, transform, refine, access, mobilize, apply, and exploit organizational knowledge across groups; and (3) *process management affordance*, highlighting the use of IT-artefact to design, visualize, prioritize, and monitor work processes, as well as allocate and manage appropriate resources to enable action and decision, across groups.

We argue that the relationship between collective identity and IT affordances needs to be teased out. Whereas the relationship has been posited as important (e.g., Bernardi and Sarker 2013; Gal et al. 2014; Nach et al. 2016), it is not clear how, exactly, IT affordances influence collective identity. This is what we seek to answer via this research.

Hypotheses

Groups working together towards a common goal may enact one or many of the aforementioned core IT affordances as they interact with a boundary IT object that is central to the accomplishment of their work. At the minimum, we argue that the groups involved will use IT as a memory repository to keep track of their common knowledge base. For example, the use of a database to store all architectural blueprints of a given building only requires for the groups to know how to access and contribute to the database; it does not require the creation of a strong collective identity. Accordingly, intergroup collaboration, either as a superordinate collective identity or intergroup relational identity, is neither necessary nor expected. We thus propose:

> Hypothesis #1 *Given a certain intergroup project and reliance on an IT-based boundary object, the sole enactment of organizational memory IT affordances (and lack of enactment of collaborative and process management IT affordances) will more likely lead to an intergroup ambivalent identity (rather than a superordinate collective identity or intergroup relational identity).*

If groups aspire to not only share a common knowledge repository but also to integrate business processes, however, each will have to reconsider the way work is done in light of the impacts of one unit's work on others. In other words, efficiency of processes cannot be localized anymore, and all groups' involvement as they perform their work towards the common goal needs to be reconsidered in light of integrated (intergroup) business processes. For example, if building owners need to provide regular feedback on the architect's blueprints before the architects can progress with their work, these groups will need to establish a process that will minimize communication delays. Such endeavor, we argue, would be facilitated by a common, superordinate collective identity, within which friction is minimized as groups collaborate. Accordingly, we suggest:

> Hypothesis #2 *Given a certain intergroup project and reliance on an IT-based boundary object, the enactment of both organizational memory IT affordances and process management IT affordances (and lack of enactment of collaborative IT affordances) will more likely lead to a superordinate collective identity (rather than an intergroup ambivalent identity or intergroup relational identity).*

Finally, in some cases, groups working towards a common objective may need to maintain (and value) their individual expertise while collaborating with other groups. Such situations call for an accrued need towards collaboration affordances across groups, in addition to memory and process affordances. For example, while building code auditors may need to interact with architects and business owners within the course of a project, they may also need to maintain their objectivity with the project and independence from other groups in order to preserve their reputation and exhibit their lack of bias. Such a situation, we argue, would more likely lead to an intergroup relational identity, which is more complex in terms of balancing each group's relationship with one another as they collaborate. We thus argue that:

> Hypothesis #3 *Given a certain intergroup project and reliance on an IT-based boundary object, the enactment of organizational memory IT affordances, process management IT affordances, and collaborative IT affordances will more likely lead to an intergroup relational identity (rather than an intergroup ambivalent identity or superordinate collective identity).*

Figure 2 graphically represents the above three hypotheses.

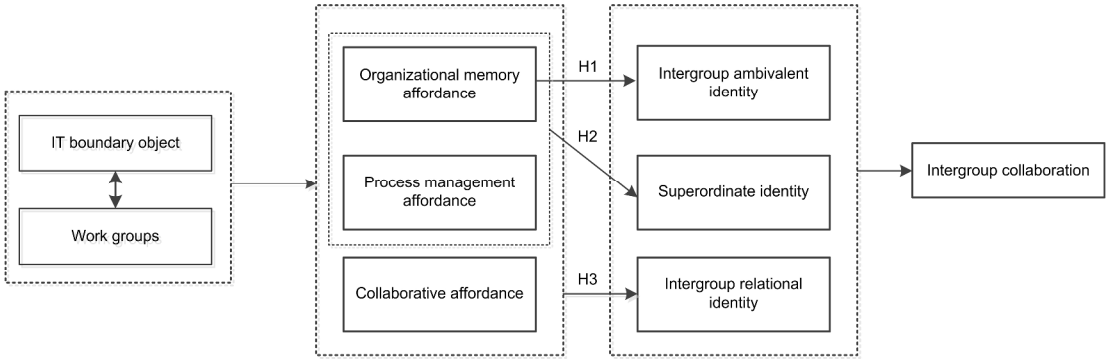

Figure 2: Relationships between IT affordances and the collective identities

Research Approach

In this section, we provide a succinct overview of the type of IT-based boundary object that is at the core of our empirical work, i.e., Building Information Modeling (BIM) systems. We then discuss our data collection plan and timeline.

Building Information Modeling Technologies

Construction projects, particularly large ones, require extensive cooperation among organizations, with wide-ranging professional backgrounds and technical expertise (Gal, Jensen and Lyytinen 2014). To work together, AEC organizations have traditionally used spreadsheets, 2D and 3D drawings which have been long considered as building blocks of their information systems. But in the last few years, the AEC industry has shown a growing interest for BIM (*Building Information Modeling*) technologies. BIM is a modeling technology and a set of associated processes that allow architects, designers, and builders to visually create, analyze, and share building blueprints (Azhar 2011). The digital representation of the building helps the project's stakeholders to make better decisions and improve the process of delivering the facility (Eastman et al. 2011). BIM technologies necessitate a dramatic shift into building drawings and visualizations; they have certain functionality which, if enacted, allow for the integration of business processes to better support collaborative work processes (Eastman et al. 2011).

BIM has led to increased collaboration in some, but not all, intergroup work settings. We have had an opportunity to examine BIM-based projects in two contrasting settings; one that was overwhelmingly successful with its use of BIM, while the other was not.

Data Collection

Our recent study (Nach, Boudreau and Lejeune, 2016) laid the groundwork for the present research. We did an initial round of interviews at both settings, and through a grounded, inductive approach, we singled out key drivers that influence the enactment of collective identity. The concept of IT affordances, among others, became salient in our theorizing. In order to take our initial findings a step further, we plan to conduct a second round of data collection, this time involving survey data. Our plan is to use a convenience sample, in that we will be recruiting our respondents from our initial settings, as we have already gained entry to these sites. Survey participants will include groups of engineers, architects, managers, and contractors that work together to support common construction projects with the help of BIM technologies. Groups of participants working together on a given project will be further categorized as exhibiting the characteristics of a superordinate collective identity, an intergroup relational identity, or an intergroup ambivalent identity, thus delineating all three types of intergroup collaborations.

Our survey instrument is based on existing measures that have been adapted for the purpose of this study. Specifically, to measure IT affordances, we used an instrument initially developed by Pavlou and El Sawy (2010; 2011) which was later adapted by Chatterjee et al. (2015). This instrument uses a Likert-type scale from 1 (strongly agree) to 7 (strongly disagree) to assess the extent of collaborative IT affordances, organizational memory IT affordances, and process management IT affordances (see Appendix 1 for more details).

In addition, collective identity is measured using three distinct instruments. First, superordinate collective identity is assessed by items adapted from Hinkle et al. (1989). Second, intergroup relational identity is measured by leveraging Rast et al. (2014)'s validated instrument. Last, for the ambivalent intergroup identity, we adapted the ambivalent identification scale proposed by Kreiner and Ashforth (2004). Each of these aforementioned collective identities was measured via multiple items, using a 7 point Likert-like scale, as detailed in Appendix 2.

Conclusion

This project aims to produce knowledge that has strong implications at the theoretical and practical levels. At the theoretical level, our goal is to understand the role of IT affordances in shaping collective identities and intergroup collaboration. By adopting the lenses of identity and IT affordances, our research is expected to shed light on the enablers of intergroup collaboration, which has thus far been largely overlooked by IS scholars. At the practical level, we expect to derive an actionable framework that will help managers address collaboration challenges in the context of intergroup projects relying on an IT-based system.

Appendix 1: IT Affordance Instrument

IT affordance		
Construct	**Prompts and items**	**Source**
IT affordance: Collaborative affordance	"In [this intergroup project], my group uses BIM to facilitate intergroup collaboration as follows:" • Effectively implement collaboration among groups • Effectively support collaboration • Effectively achieve synchronous, real-time collaborative work • Effectively enable members to work collaboratively	Adapted from (Chatterjee et al. 2015)
IT affordance: Organizational memory affordance	"In [this intergroup project], my group uses BIM to store, access, and disseminate information as follows:" • Effectively capture project information • Effectively capture project history (e.g., discussions, insights, work data, documents) • Effectively store, archive, retrieve, share, and reuse of project information and best practices • Effectively create a knowledge repository	Adapted from (Chatterjee et al. 2015)
IT affordance: Process management affordance	"In [this intergroup project], my group uses BIM to help manage business processes in the following ways:" • Adequately visualize and monitor business processes • Accurately provide information to support business processes • Effectively streamline business process workflows • Support task/resource allocation, prioritization, and scheduling in order to sustain business processes	Adapted from (Chatterjee et al. 2015)

Appendix 2: Collective Identity Instrument

Collective identity		
Construct	**Prompts and items**	**Source**
Superordinate collective identity	"In the context of [this intergroup project]…" • Members feel strong ties to the overall group. • Members behaved like a unified group. • Members are committed to common project objectives. • Members value their membership in the overall group. • Members feel that they have a personal stake in the success of the overall group.	Adapted from (Sethi 2000)
Intergroup relational identity	"In the context of [this intergroup project]…" • The relationship our group has with other groups is part of who we are. • The collaborative relationship between our group and the other groups is part of what makes us who we are. • Our group is in part defined by its relationship to other groups. • The relationship between our group and other groups is important to what kind of group members we are.	Adapted from (Rast, van Knippenberg, and Hogg 2014)
Intergroup ambivalent identity	"In the context of [this intergroup project]…" • Our group has mixed feelings about the collaborative relationship with other groups. • Our group feels conflicted about working with other groups. • Our group has contradictory feelings about other groups.	Adapted from (Kreiner and Ashforth 2004)

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