BUILDING DYNAMIC CAPABILITIES THROUGH EMERGENT GROUPS IN AN
UNCERTAIN WORLD

INTRODUCTION

One Sunday in Southern California, with Santa Ana winds blowing, the tinder dry, and the temperature hot, a forest fire broke out that rapidly became uncontained. Then six more large fires broke out. Soon homes were consumed. The entire city of San Diego seemed engulfed in an uncontained firestorm. Two different emergent groups from a radio station and an internet software development firm composed of people with no previous experience working with each other and with different human capital resources quickly formed to provide help. Both groups performed well: one group created a map with evacuation routes and shelters that was independently identified as keeping the public calm and informed during the days of crises; the other group kept the map populated with critical information on the trajectory of the fire perimeter so the public could make informed guesses about whether they and their loved ones were in potential danger or had a home to return to. Of the two groups, however, only one succeeded in creating a new capability for both organizations that now have a new way of communicating to the public during emergencies. Why did one succeed at creating a new capability and one did not when the firms were the same, the environmental selection event that triggered the emergent groups was the same, and the opportunities for learning by doing were the same?

BACKGROUND

Recent evidence shows that capabilities are developed by individuals working in groups (Ethiraj *et al.*, 2005; Rothaermel *et al.*, 2007; Eisenhardt *et al.*, 2000; Ethiraj *et al.*, 2005; Helfat *et al.*, 2003; Zollo *et al.*, 2002). Several models of the process by which capabilities are developed emphasize individual and group attributes such as learning (Zollo *et al.*, 2002), decision making (Eisenhardt *et al.*, 2000), and group structure and processes (Helfat *et al.*, 2003). For example, Helfat and Peteraf describe the capability lifecycle of an organization as consisting of the formation of a group of heterogeneous individuals organized around an objective involving the creation of a capability (Helfat *et al.*, 2003). The group then engages in a series of actions that develop the capability through experience with each other and in searching for alternatives for developing the capability over time. Finally, the group facilitates the process by which the capability is practiced and matures over time. Implicit in these formulations is that groups provide the organization with capability options for future actions that may or may not be practiced in any particular situation (McGrath *et al.*, 2003).

The existing literature provides broad suggestions for developing capabilities, but does not address the challenges associated with using emergent groups well (Hutzschenreuter *et al.*, 2006). For example, some broad suggestions include role based responses for situations where the adverse selection events are known ex ante in high reliability organizations such as aircraft carriers and trauma centers (Bigley *et al.*, 2001; Faraj *et al.*, 2007; Weick *et al.*, 1993). In these situations individuals are pre-trained in specific role behaviors to the point where they can be deployed by their roles in a "plug-and-play" approach even if they have not worked together before. In an increasingly uncertain world, situations where the selection events are unknown ex ante are greater and approaches cannot rely on pre-training for specific roles. In order to fill this gap in the literature, we studied ten emergent groups, tasked with developing new organizational capabilities, in-depth and over time from their beginning

through completion. While all the groups succeeded at providing an immediate response to the triggering selection event, only five of the groups successfully developed a new organizational capability while five did not. We analyzed both the challenges consistently faced by emergent groups in responding to selection events and the practices that each group used to manage the challenges inherent in emergent groups to both solve the precipitating event and to build new dynamic capabilities.

METHODS

We used a collective case methodology (Stake, 2005) to study emergent groups that were expected to solve the immediate problem and create a new organizational capability. We qualitatively compared the existence of the practices between those cases who had successfully developed a new capability and those who had not. Because we collected data at the individual and group levels yet sought to understand how these levels contributed to organizational level capabilities, we chose a method that allowed for vertical analyses of categories across levels. Most multi-level approaches such as hierarchical linear modeling (HLM) or within-and-between analysis (WABA) deal with this problem by portioning the variance between the levels in order to be able to examine each level separately (Lacey *et al.*, In-press). The exceptions to this approach are the set theoretic methods based on Boolean algebra, the algebra of logic and set-theoretic relationships. We used one of these methods known as qualitative comparative analysis (QCA) to compare sets of mutually exclusive categories, known as crisp sets, for the presence or absence of tension management practices in succeeding or failing to develop a capability.

RESULTS

We found that the task of developing new capabilities creates the continuous presence of three tensions in balancing the costs and benefits experienced by the group. The first tension concerns the different expertise residing in the group: there is a clear benefit to using the different points of view in the group, but the future orientation of the capabilities makes it costly to agree on a single way to evaluate the different viewpoints. The second tension concerns the mixed priorities within the group: the organization is likely to benefit by different members using the developed capability in different ways that may lead to new applications but doing so makes it costly to establish a single capability or a single set of priorities for creating a capability. The final tension concerns the costs and benefits of unstable membership: the different members are likely to devote different levels of focused attention to the capability-building process which can be costly by slowing the group down in arriving at a solution but can be beneficial by focusing the group's attention on completing sub-tasks before members leave and summarizing progress both before they leave and after they return. Managing these tensions to maximize their benefit while minimizing their costs is very complex and thus, not easily imitated.

Practices to manage expertise-related tension: This tension concerns the need to identify ways for group members to leverage the different points of views in the group, while recognizing that the future orientation of the capabilities make it difficult to agree on a single way to evaluate the different viewpoints. Across the ten cases, we identified four practices that were used by at least two of the groups. The first practice we labeled "emergent translators". These were group members who emerged, without explicit tasking, to translate information between others who did not speak the same technical language or understand its significance. These emergent translators emerged in five groups and helped to manage the tension by ensuring that different viewpoints were understood by others. A second practice, used by six of the groups, was explicitly encouraging building on each other's work, often using rapid-building-oriented brain-storming sessions among group members. This practice

helped to manage the tension by replacing the need for objective evaluations of each others' ideas with a process of collectively discussing and transforming those ideas for which there was the most overlap among the members. A third practice – used by six of the groups - for managing the tension was the emergence of a story within the group that each member used to share their point of view. By having a common reference for sharing different points of view about the same story, ways to supersede those differences were more easily identified. A final practice, observed in four of the groups, was to have the group's emerging ideas evaluated by an outsider in the presence of all of the members. The evaluation served not only the purpose of providing external feedback, but more importantly, having the group members present during this evaluation allowed the members a new common referent from which to share points of view on how to improve their ideas.

Practices to manage priority-related tension: Different priorities create a tension within the group as to what issues and information are more important than others. One practice for managing this tension, observed in five of the groups, was the group engaged in an iterative process of collectively reframing the problem that the capability was intended to solve in such a way as to encompass a larger set of possible solutions than initially conceived. A second practice to manage the priorities tension was the revision of group goals in response to changes in member's preferences. As new information came into the group, causing members to shift their preferences, three of the group members shifted their goals to incorporate these changes. This shifting helped to manage the priority tension since it made explicit that the group was intent on meeting all members' priorities throughout the group's efforts. A third practice we observed in six of the cases was the explicit discussion of each other's interests. A final practice for managing the tension was to create contingency plans to the idea for the capability they were developing. The contingency planning managed the priorities tension by incorporating members' different priorities: instead of dismissing a member's priorities, the member's priority might be instituted within the back-up plan.

Practices to manage differences in attention: This tension concerns differences in commitment and timing of contributions that must be allowed if valuable expertise is to be accessed, but must be managed to avoid free-riding, emotional exhaustion, inadequate participation of those with less time, and feelings of inequity among those who give more time. Four practices for managing this tension were observed in two or more groups. The first practice – observed in two of the groups is what we call "pulse-taking", in which the energy of the group is continuously assessed to identify periods of less energy, and then efforts such as coffee or yogurt breaks are taken to increase the energy level. This helps to manage the attention tension since it engages the whole group in becoming re-energized even if only one or two members experience exhaustion. A second practice used by six of the groups was a set of actions that the group took to make it easy for members to rejoin ongoing conversations in the project. The unstable membership meant that members often left during meetings to attend other meetings or take care of other business. Group progress would have been harmed if the group stopped their conversation every time a member returned; moreover, making no effort to help the member rejoin the conversation would lead to missing the returning member's opinion. So these six groups took a variety of actions to help members easily rejoin conversations, including visibly displaying work they were doing (e.g., on flip charts), subdividing the work into "mini-projects" so that a returning member could easily place the ongoing conversation into a context, dating work products, and frequently synthesizing.   A third practice used by five of the groups to manage the tension was to use external feedback, often provided through a group member, to focus attention of group members during the group process.   A final practice for managing the tension that was observed by eight of the groups was what we refer to as "building on volunteerism". Building on volunteerism refers to recognition by the

group that the members are essentially volunteers; they can choose not to participate at any point in the process (even those with little autonomy can choose to not contribute or simply acquiesce to the suggestions of others). This recognition led to practices that leveraged the volunteerism, such as allowing people to select the aspect of the problem that they are most passionate about (rather than assigning them a task that was commensurate with their job responsibilities or expertise) and having the group help the person pursue that passion through brainstorming, mentoring, or "an extra pair of hands.

Necessary and Sufficient Practices for Building Dynamic Capabilities

For each tension, we indicated if the group had or had not used each of the four identified practices. Table 1 shows the truth table for the expertise tension practices, priority tension practices, and the attention tension practices and whether or not the case was judged to have developed a capability.

----Insert Table 1 about here----

The QCA analysis of the truth table are detailed under Table 1 and shows that there are two alternative configurations of the four practices for minimizing the negative aspects of diverse expertise while maintaining its positive aspects that are associated with capability building: a) developing a common story through which members share their points of view and b) encouraging building on others' work or c) developing emergent internal translators and d) using outside evaluators to publically evaluate the group's effort. That is, there are two sets of alternative configurations that are both necessary and sufficient for managing diverse expertise. Since either of these configurations was equally associated with building a capability for managing expertise diversity, they are consistent with the organizational principle of equifinality. Table 1 also shows that there was only one configuration of the four practices for managing the differences in priorities. This necessary and sufficient set of practices consisted of: a) reframing the problem to enlarge the number of possible solutions and b) discussing each member's interests. Revising goals and contingency planning were neither necessary nor sufficient practices for managing differences in priorities in order to develop a capability. Finally, Table 1 shows that groups that succeeded at developing a capability managed their attention focus tension by either: a) making it easy to rejoin ongoing conversations and b) building on volunteerism or c) pulse-taking and using external feedback to drive focus. That is, among the four practices, two sets of two different practice configurations were separately both necessary and sufficient for managing the tensions of diverse focus.

Table 1: Truth Table for Combinations of Practices for Managing Differences in Expertise, Priorities, Attention to Build Capability

Where: Yes = presence; No = absence

	Translator (A)	Building (B)	Story (C)	Outside evaluation (D)	Reframing (E)	Goal revision (F)	Interests (G)	Contingency plans (H)	Pulse (I)	Rejoin (J)	External Feedback (K)	Volunteerism (L)	Capability
Design Corp.	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Radio & Internet Corps.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Government Command Post (CP)	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes
Complex Corp. White Paper (WP)	Yes	Yes	Yes	No	Yes	No	Yes	No	Yes	Yes	No	Yes	Yes
Consumer Corp.	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Software Corp.	Yes	No	No	No	No	No	Yes	No	No	Yes	No	No	No
Professional Organization	No	Yes	Yes	No	No	No	No	Yes	No	No	No	Yes	No
Educational Institution	No	No	No	Yes	No	No	No	No	No	No	No	Yes	No
Radio & Internet Corps.	Yes	No	No	No	No	No	No	No	No	No	No	Yes	No
Complex Corp. Virtual Teaming (VT)	No	No	No	No	No	No	No	Yes	No	Yes	No	Yes	No

A•B ⊂ Z, where A•B ⊆ Z but A•B≠Z (A and B are a subset of Z)

C•D ⊂ Z, where C•D ⊆ Z but C•D ≠Z (C and D are a subset of Z)

A•B + C•D →Z (the subset A and B or the subset C and D) imply Z

E•G ⊂ Z where E•G ⊆ Z but E•G≠Z (E and G are a subset of Z)

F•H ⊄ Z and F•H ≠Z (F and H are not a subset of Z)

J•L ⊂ Z where J•L ⊆ Z but J•L≠Z (J and L are a subset of Z)

I•K ⊂ Z where I•K ⊆ Z but I•K≠Z (I and K are a subset of Z)

J•L + I•K →Z (the subset J and L or the subset I and K) imply Z

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