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# An Embedded Model of Cultural Adaptation in Global Teams

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This research examines the process through which globally distributed work teams attempt to adapt to cross-cultural differences while being constrained by the local contexts in which they are embedded. We conducted an in-depth field study of nine software development teams that included 132 ethnographic initial interviews, periods of team observation, 19 follow-up interviews, and team meetings. Inductive analysis of the data led us to develop an embedded model of cultural adaptation in global teams to describe the process we observed as teams attempted to cope with important differences in interpersonal communication styles, preferred approaches to organizational control and authority relations, and work-related knowledge and problem-solving approaches. We show how local embeddedness and interdependence across sites together drive cultural adaptation dialectics as actors attempt to resolve rippling tensions within and across nested social structures. The model of cultural adaptation that we developed as an outcome of our research challenges literature that assumes adaptation can be contained within a team and is distinctive in incorporating a dynamic systems view of culture. We build on and develop theory concerning multilevel structuration dynamics. Our work may have implications for other types of boundary-spanning collaborations such as strategic alliances and multinational corporations.

*Keywords*: intercultural adaptation; global teams; virtual teams; distributed teams; structuration; dialectic change; embeddedness; dynamic systems; qualitative methods; cultural differences
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## Introduction

When globally distributed team members push back their desk chairs from email and WebEx, what envelops them are the people, habits, objects, and rhythms of their locality: their parents, children and friends; their local colleagues; the transportation system; the education system; the local job market. Do these worlds matter in the functioning of a globally distributed team? In this study, we took an inductive approach to that question, and the answer turns out to be yes, those worlds do matter.

Yet these worlds have received relatively little attention in theory development and in empirical research to date concerning global teams. The team typically is in focus, but the local contexts in which team members are embedded recede. Our research questions were "What challenges do global team members describe as 'cultural' in their team?" and "what adaptation, if any, occurs concerning these challenges?" We studied nine globally distributed software development teams longitudinally, including 151 ethnographic interviews, team meetings, and field observations at multiple points over a 21-month time period. We discovered that when team members talked about what they thought of as important national cultural differences, they laced these accounts with references to local conditions and factors that made the focal cultural differences resistant to adaptation. Moreover, we traced an effortful, zigzagging, time-consuming process by which the teams endeavored to adapt to the focal differences.

Our inductive research led us to develop a contextually embedded model of cultural adaptation in global teams. It builds on and further develops theory concerning multilevel structuration dynamics. We show how local embeddedness and interdependence across sites together drive cultural adaptation dialectics as actors attempt to resolve rippling tensions within and across nested social structures. The embedded model of cultural adaptation that we developed as an outcome of our research challenges literature that assumes cultural adaptation can be contained within a team (e.g., Adair et al. 2006, Earley and Mosakowski 2000). Our model also is distinctive in that it incorporates a dynamic systems view of culture in which cultures and selves mutually constitute each other (e.g., Kitayama 2002, Markus and Kitayama 2010). This contrasts with a static entity view of culture that focuses on the cultural values and ways of thinking that are learned and used by individuals (e.g., Earley and Randel 1997, Hofstede and Hofstede 2005).

### Cultural Adaptation in Global Teams

There have been two major reviews in recent years of the literature concerning globally distributed teams

(Connaughton and Shuffler 2007, Hinds et al. 2011). Both reviews conclude that our understanding of the significance and impact of national culture in such teams is extremely limited. Most recently, Hinds et al. (2011) found 38 empirical studies of global work published between 2000 and 2010 in top management journals, only 11 of which examined the significance of national culture. Most of these, they note, take the static entity view of culture. Existing studies indicate that cultural differences are important (e.g., Baba et al. 2004, Carmel 1999, Carmel and Tjia 2005, Cramton and Hinds 2007, Gibson and Gibbs 2006, Krishna et al. 2004, Levina and Vaast 2008, Rai et al. 2009, Zaidman and Brock 2009). For example, studies show that national cultural differences can be the source of misinterpretations in cross-site communications (e.g., Cramton 2001, Grinter et al. 1999, Kayworth and Leidner 2002, Krishna et al. 2004); fuel conflict (e.g., Hinds and Mortensen 2005, Polzer et al. 2006); undermine trust (e.g., Baba et al. 2004); and lead to errors, project delays, and client dissatisfaction (e.g., Grinter et al. 1999, Rai et al. 2009). There is no consensus, however, about which cultural differences are important, nor whether standard definitions of culture are appropriate to guide research in this area.

The literature offers even less concerning cultural adaptation in globally distributed teams. Earley and Mosakowski (2000) propose that successful transnational teams create "hybrid" team cultures over time. The hybrid cultures consist of norms for communication and conflict management, a shared team identity, and shared performance expectations, which together facilitate performance. Their empirical results show that teams that were moderately heterogeneous in the nationalities of members struggled more to establish a hybrid culture and achieve high performance than teams with either a highly heterogeneous composition or homogeneous composition. They saw nationality as a trait of individuals who have learned particular ways of thinking, communicating, and interacting in their home cultural milieu. Meanwhile, Adair et al. (2006) seek to explain the emergence and characteristics of team "third culture" based on team composition and process variables such as collectivist orientation, communication style, cultural intelligence, and team relationship and task conflict. They define culture as "a shared schema . . . that guides interpretation and behavior" (Adair et al. 2006, p. 208). They differ from Earley and Mosakowski (2000) in defining the product of team cultural adaptation in purely cognitive terms rather than cognitive and behavioral terms: as a shared schema rather than team process norms together with shared identity and expectations. According to Adair et al. (2006, p. 210), third culture forms when members of multicultural teams "update their schemas and develop a shared understanding."

What these views of team intercultural adaptation have in common is the assumed separability of the team and its cultural adaptation process from the contexts of team members: other people, local norms, institutions, organizational structures and role relationships, etc. This is because they are grounded in the static entity view of culture: they assume that culture is learned by individuals and carried in their minds and behavior patterns. They also assume that these individuals can adapt their thinking and behavior patterns if they are sufficiently motivated, have the right skills, and put the right team processes in place. Much of the empirical work that addresses global team cultural adaptation is aligned with the static entity view. For example, Gibson and Gibbs (2006) found that the presence of a psychologically safe communication environment moderated the impact of national diversity on innovation in globally distributed teams. Among studies of distributed work that give limited attention to cultural adaptation, factors such as swift trust (Jarvenpaa et al. 1998), shared identity (Hinds and Mortensen 2005), and regular communication (e.g., Maznevski and Chudoba 2000) have been considered.

Some research concerning globally distributed teams, however, has recognized that members are affected by various contextual differences across locations. Cramton (2001) highlighted differences in organizational contexts and local situations and demonstrated how difficult it is for distributed team members to establish a shared understanding of these factors. Hinds and Mortensen (2005) showed that a shared understanding of task context moderates task conflict in such teams. Baba et al. (2004) described key differences in the business contexts spanned by a globally distributed team that, together with cultural differences, fueled divergent ways of thinking about the team's work. Levina and Vaast (2008) explored differences in country and organizational contexts that, they concluded, gave rise to status differences across locations and inhibited project effectiveness. Zaidman and Brock (2009) described software development teams' multiple and conflicting norms for knowledge transfer as a result of the influences of business, professional, and cultural contexts. This work shows that various combinations of task, organizational, professional, business, country, and cultural contextual factors affect what goes on in global teams. None of it, however, set out to study the significance of cultural issues in global teams and the research does not clarify how culture is related to the other factors. With regard to adaptation, Zaidman and Brock (2009) observed that some norms derived from conflicting contexts changed over time but others did not. Managers, they reported, were "only partially effective" in attempts to facilitate change (Zaidman and Brock 2009, p. 28). Similarly, Levina and Vaast (2008) highlighted the role played by middle managers in seeking to ameliorate tensions

across country contexts. Although adaptations occurred in some of the teams examined in these two studies, no systemic view of how or why change occurred is offered, other than the observation that team leaders sometimes were successful (but other times were unsuccessful) in attempts to facilitate change. This work recognizes the importance of context but lacks an integrated view of culture, context, and cultural adaptation that can organize and explain these effects.

### A Dynamic View of Culture and Adaptation

Contrary to the more static view of culture on which most research has been based, a "systems" definition of culture is sensitive to context (see Kitayama 2002; Kitayama et al. 2000, 2006; Markus and Kitayama 2010). Kitayama (2002) defined culture as "a dynamic system that is composed of many loosely organized, often causally connected elements—meanings, practices, and associated mental processes and responses" (p. 92). "[C]ulture is not just in the head (in the form of values and beliefs)," he continued, "culture is 'out there' in the form of external realities and collective patterns of behavior." These systems include educational, economic, and political institutions and organizational and social routines, expectations, norms, and structures. Markus and Kitayama (2010) proposed that cultures and selves are dynamically recursive. In other words, institutions, routines, norms, and social expectations exert powerful force upon the thinking, feeling, and behavior of individuals, yet the influence is mutual. Individuals vary in how they enact the cultural systems around them and have the potential, through their day-to-day activities, to change these institutions and norms.

The static entity and dynamic systems approaches differ in the mechanism by which culture is thought to exert influence. In the entity approach, values and meanings that have been internalized by individuals guide behavior. This approach does allow a role for social institutions: institutions are shaped by cultural meanings and values, which they transmit to individuals who then act on the basis of these learned values and meanings (e.g., Hofstede 2001). From a system perspective, culture is far less orderly. Individuals encounter in their location and social relationships specific yet varied sets of norms, rules, routines, institutions, artifacts, expectations, and meanings to which they accommodate themselves to varying degrees. It is the position of Kitayama (2002) that groups and institutionalized structures can cause culturally specific behaviors by individuals without necessary mediation through internalized values and shared meanings. This approach has been little utilized in management research to date (for an exception, see Morris et al. 2008). For the purpose of research on global teams, this systems approach to culture makes visible an essential truth of such teams: members are physically located in different places. When they turn their desk chairs away from email and WebEx, they are confronted by different conditions and pressures to conform to local sets of norms, rules, routines, and meanings.

The recursive aspects of the dynamic systems approach to culture suggest that cultural adaptation might reasonably be considered from a structuration perspective. In fact, a few studies in the structuration tradition have anticipated some sort of recursive adaptation process in global teams. Walsham (2002), for example, proposed that a structurational approach could be applied to understanding intercultural issues in global software development and technology transfer. Rejecting Hofstede-style cultural dimensions, he suggested that cases of intercultural working be examined for different systems of meaning, notions of power relations, norms and interests, and their expression in work patterns and behaviors. He thought that a "negotiated culture of cooperation" might emerge after a period of conflict but could not anticipate the ways this could be achieved (Walsham 2002, p. 378).

Perlow et al. (2004) studied group norms in three different country contexts for doing the same type of work, software development. They did not study globally distributed teams, but the work led them to wonder what cross-locational adaptation processes would be like for such teams. They proposed that different norms for helping behavior within locations were the result of a multilevel fitting process, or "nested structuration." They envisioned mutually reinforcing relationships among aspects of the institutional context (government policies, educational and mobility systems), organizational reward structures, and workgroup helping patterns. Their data, however, imposed two major limitations on their contribution: First, they could not document all the theorized relationships, particularly the upward influences (e.g., showing that reward and helping systems do in fact influence the institutional context). Second, their data were cross-sectional and could not provide a longitudinal account of actual processes that had shaped or were shaping the "fit" they observed. They did not offer a theoretical account of what those processes might look like. Although their study was a cross-cultural comparison rather than a study of global teams, it poses a number of intriguing questions about the actual processes that operate among nested layers of structure within and across locations.

In sum, there is evidence that a variety of cultural and contextual tensions affect global teams. These are not well accommodated by models of culture and adaptation derived from traditional research concerning colocated teams. A newer, potentially more appropriate approach to culture is available. In addition, there is a smattering of work that poses relevant questions or suggests new angles but these remain unanswered or open-ended. There is a need for a deep exploration of the complex phenomena that can bring forward essential features and

dynamics, integrating and distilling prior work but also revealing critical missing pieces. To this end, we studied longitudinally and in depth nine distributed software development teams, representing three different cross-national constellations. We explored a wide range of cultural and contextual influences on the teams. In our findings, we provide a new embedded model of cultural adaptation. We highlight key cultural differences and show that these differences pose the greatest adaptation challenge when they are enmeshed in multiple layers of local norms, institutions, and conditions. Nested norms, institutions, and conditions hold cultural differences in place in global teams, setting the stage for a struggle to resolve incompatibilities when the systems are joined by the fragile thread of team collaboration. We identified a distinctive adaptation process—a dialectical process—by which these tensions are addressed and through which adaptation may gradually occur. In addition to our contribution to the literatures concerning global teams, culture, and intercultural adaptation, our work provides a dynamic theoretical account of nested structuration that is missing in the current literature.

## Method

The study design was intended to maximize our ability to detect challenges that global team members thought of as "cultural" and how they dealt with these differences. We established a research relationship with a large high-technology multinational company, GlobalTech, which was interested in learning more about global team effectiveness. GlobalTech carried out a great deal of software development through global teams, with major development centers in 10 countries. It had large, established development organizations in Germany and the United States, which also were major markets for the company. It was in the process of making a massive commitment to offshore software development in India. Employment in India was 1,000 with plans to double in coming years. In general, the company policy was to create development teams distributed across two or more sites with team members fully dedicated to the joint project. Interdependence between sites was high and the organization actively supported cross-site collaboration through "best practices" such as occasional travel, use of audio conferencing and videoconferencing, and cross-cultural training.

We concentrated on the three countries most heavily represented in GlobalTech development—the United States, Germany, and India—so there would be a large pool of potential teams for the study. We focused on global teams distributed across just two country locations, since, all else being equal, these should have the strongest cultural subgroup fault lines (Cramton and Hinds 2005). We anticipated that cultural differences and adaptation challenges would be observable in such teams. We asked our company contact to identify nine such teams of approximately 10–25 members that were doing highly interdependent work, that were defined as a single work unit with a single project manager, and that had at least two people at each location. We asked for three teams distributed between Germany and the United States, three teams distributed between Germany and India, and three teams distributed between the United States and India. The limited number of locations and cross-cultural relationships allowed us to observe how members of each culture functioned and were perceived in two different bicultural constellations. Our company contact made the initial approach to team managers and we then provided additional details and sought informed consent.

### Data Collection

Table 1 summarizes team and team member characteristics and key aspects of data collection that are discussed in the following pages. There were significant differences in the national cultural backgrounds of team members across locations and in the heterogeneity of cultural backgrounds within locations. Team heterogeneity was shaped not only by the underlying local population but by the perceived attractiveness of locations for expatriate assignments. Developers from India, Germany, and other parts of the world were receptive to assignments at U.S. locations because of the concentration of professional expertise at these locations and perceived quality of life. To the extent that there was heterogeneity at the German location, developers from other locations wanted to spend time there because of the concentration of product knowledge at the company hub. On the other hand, Western employees were not receptive to assignments at the Indian location because of uncertainty about quality of life, resulting in the highest national cultural homogeneity at this location.

To facilitate understanding of cultural nuances, we created a multilingual research team consisting of two professors and three graduate students whose cultural backgrounds reflected the three countries involved in the study. The research team traveled to two cities in Germany, one city in India, and three cities in the United States to conduct interviews with members and managers of the nine teams and for on-site observations of the teams at work. Of the 138 identified team members, we were able to interview 132 team members and managers in person at their place of work. Most informants were software developers with the exception of 18 informants who served as liaisons between developers and the sales organization. We returned to all locations 12 to 18 months later to conduct 19 follow-up interviews with managers and team leads and to hold group meetings with each local subgroup. In these group meetings, we presented early findings and sought feedback from team members. Our entire field engagement

**Table 1 Data Collected About Teams, Members, and Projects**

| Team name and locations | Interviews (gender) | National backgrounds | Observation days | Team characteristics: Task description | Team characteristics: Team and project longevity at time of initial interviews |
|---|---|---|---|---|---|
| IU1 | | | | | |
| India | 6 (1 female, 5 male) | All Indian | 4 | All team members charged with resolving customer problems with respect to implementing, using, or extracting results from a particular system. | Project was about two years old. Low turnover in the United States but loss of two key people in India shortly after the initial interviews were conducted. |
| United States | 4 (1 female, 3 male) | 2 Americans<br>1 German<br>1 Pakistani | 4 | | |
| IU2 | | | | | |
| India | 7 (1 female, 6 male) | All Indian | 0 | Team develops supply chain management systems. U.S. team involved in most front-end design and development; India developers manage gaps in programming interface. | A short-term project, expected to run about three months, although there could be follow-on work. Team was assembled and cross-site work started two months before interviews were conducted. |
| United States | 6 (3 female, 3 male) | 4 Americans<br>1 Irish<br>1 German | 0 | | |
| IU3 | | | | | |
| India | 4 (1 female, 3 male) | All Indian | 5 | Development and development support of cross-applications, including a new tool on an aggressive schedule. Product management and high-level design in United States. Second-level design, specifications, and support in India. | Project was one year old, started at the U.S. location. Personnel in India were added two months later. Low turnover in the United States. Growth in personnel in India. |
| United States | 7 (2 female, 5 male) | 2 Americans<br>1 Canadian<br>1 Chinese<br>2 Indians<br>1 German | 5 | | |
| IG1 | | | | | |
| India | 16 (2 female, 13 male) | All Indian | 5 | Development and development support for a specific set of products. Development support carried out across sites with product management in Germany. | Project was about six years old, the result of an acquisition. Some German and Indian team members had been with the team the entire time. Team had been reorganized six months before interviews, with a reduction in experienced personnel by about half in both Germany and India and the addition of three new developers in India. |
| Germany | 8 (3 female, 5 male) | 7 Germans<br>1 Tunisian | 5 | | |
| IG2 | | | | | |
| India | 14 (2 female, 12 male) | All Indian | 0 | Provide support for retail software solution. Ownership for software being transferred from Germany to India. | German side of the project is seven years old. Some Indian team members were added to the team three–four years after that, with an additional 11 new Indian team members added eight months before interviews were conducted. At that time, some of the original Indian team members were transferred to other projects. |
| Germany | 4 (all male) | All German | 0 | | |
| IG3 | | | | | |
| India | 6 (2 female, 4 male) | All Indian | 5 | Quality management for a set of products. Test coordination and team decisions made in Germany; Indian team reports to a quality manager in Germany and a team manager in India. | The team, including German and Indian members, was acquired from another company about six years before initial interviews were conducted. Although turnover has been low, there have been management-level changes because of the acquisition. |
| Germany | 5 (2 female, 3 male) | 3 Germans<br>1 Slav<br>1 Indian | 5 | | |

**Table 1 (cont'd)**

| Team name and locations | Interviews (gender) | National backgrounds | Observation days | Team characteristics: Task description | Team characteristics: Team and project longevity at time of initial interviews |
|---|---|---|---|---|---|
| GU1 | | | | | |
| Germany | 9 (all male) | All German | 5 | United States tasked with creating user interface. Germany provides back-end functionality and the database application. | Project was 1.5 years old. Low turnover in both locations. |
| United States | 7 (1 female, 6 male) | 3 Americans<br>3 Indians<br>1 German | 5 | | |
| GU2 | | | | | |
| Germany | 7 (1 female, 6 male) | 4 Germans<br>1 Austrian<br>1 Chinese<br>1 Spaniard | 5 | Software development for a particular personnel-related functionality. The U.S. team works on two aspects of the functionality, and the German team works on one. | Project was about two years old. Low turnover in both locations. |
| United States | 2 (1 female, 1 male) | 1 American<br>1 Australian | 5 | | |
| GU3 | | | | | |
| Germany | 12 (4 female, 8 male) | All German | 0 | Product management for two specific related functionalities, one of which was introduced about a year previously. Both products handled in both locations. | One aspect of the project was two years old, and a new aspect had been added within the year. Team structure was in flux at the time of interviews. The team had been divided into two subgroups within the previous six months in order to manage the new product in addition to the initial product. Many of the team members had, however, worked together for two years, although locations and reporting relationships have changed. |
| United States | 6 (3 female, 3 male) | 3 Americans<br>2 Germans<br>1 Indian | 0 | | |
| Total | 132 | — | 58 days | — | — |

*Note.* Nineteen follow-up interviews a year later and team meetings with 83 members are not included in the total.

spanned 21 months because of the number of locations involved and the fact that every team was distributed across two country locations. Our research relationship with GlobalTech was a "learning for learning" exchange. Members of GlobalTech who consented to participate in the study gave us interviews and allowed us to observe their team work activities; we in turn gave presentations for everyone who participated that summarized at a general level what we had learned about what was going well in the global collaboration and the nature of challenges, along with best practices based on our prior research and experience.

Because of our interest in identifying the cross-national differences, if any, that were salient to the members of the distributed teams and understanding these matters in the broad context of work, we used ethnographic procedures (Spradley 1979) to conduct our interviews. Rather than asking pointedly about perceived cultural differences, we employed semistructured interviews loosely organized around a set of open-ended questions that allowed observations about differences to emerge only if they were salient to the informant. Our protocols included probes that we used if the informant opened the topic. Sample questions included "Describe your team," "How do you interact with your colleagues at other sites?," "Since you've been on the team, what kinds of changes have you seen?," and "Describe your working relationships with your team members." The most directive question was the last one in the protocol, when informants were asked specifically what they had learned while working on a distributed team with colleagues in another country. Interviews lasted an hour and were typically conducted in conference rooms and private offices. Interviews were recorded and transcribed.

Because we recognized the importance of observing differences in behavior, locations, and organization directly, we carried out concurrent observations of six of the nine project teams (two U.S.–Indian teams, two U.S.–German teams, and two German–Indian teams). We use the term "concurrent observation" to refer to the process of observing simultaneously project members working at different sites. For example, for a workgroup divided between Germany and India, one researcher conducted observations at the German site, whereas another

researcher observed in India during the same week. We observed teams for 8–12 hours per day and prepared detailed field notes that were typed and distributed to everyone on the research team at the end of each day. We paid attention to both colocated and distributed interaction. In addition to sitting with informants to observe them while working, we attended meetings, observed conference calls, had lunch with them, and went to after-work gatherings if invited. We also took detailed notes on their surroundings. In total, we spent 58 days observing participants.

### Data Analysis

Each author read through the data independently, looking for themes that were pronounced and interesting. Intercultural challenges and the struggle to craft adaptations palatable to both sites were prominent themes. We then focused on identifying the specific cultural differences that were salient in the teams, the meaning people attached to them, and any adaptations that had been made to them. The data were analyzed at the level of individual passages of text and at the team level. Following empirical grounded theory procedures (Strauss and Corbin 1990), we used NVivo software to perform open coding of passages of interest in the interview transcripts. The passages were coded to reflect the general topic and the specific culture or cultures referenced. This process yielded roughly 500 coded passages.

We conducted two rounds of analysis on coded passages. We first arrayed them in a four-column table as follows: comments about culture and behavior that were literally described as "German"; comments about culture and behavior that were literally described as "Indian"; comments about culture and behavior that were literally described as "American"; and general comments about the significance of culture, cross-national learning, or adaptation processes. We grouped comments together by the national identity and team affiliation of the speaker and grouped teams by team type (Germany–India, U.S.–India, or Germany–U.S.). For example, all comments of the German members in a particular Germany–India team are grouped together, followed by all the comments of the Indian members of that team. This enabled us to examine the consistency in cultural observations within and across national groups in the team (i.e., Are the German members saying similar things? Are the German members of the team saying things similar to the Indian members of the team?). Furthermore, all the Germany–India teams (and other types of teams) were grouped together, enabling consideration of the degree of consistency in views of culture across teams with the same cross-national composition. We found considerable consistency, both across cultural configurations within teams and across teams with the same cultural configuration. Speakers of different cultural groups sometimes differed in exactly how they explained differences, but there was a shared understanding across groups of what the key cultural differences were. We used our observation notes to verify what we were told in interviews and to provide examples of what had been described. We noted descriptions of factors that were seen as heightening the importance or persistence of salient differences. The mention of such factors is a notable aspect of the data and figures prominently in our final theoretical construction. We also sought to understand what kinds of adaptations, if any, were being made, by whom, and for what reason. The salient cross-cultural differences are described in the Findings section. They fell into three broad domains: expectations concerning organizational control and the exercise of authority, interpersonal communication, and work-related problem solving and cultivation of knowledge. These issues came up in every bicultural configuration, although they were not equally problematic in every configuration. We reviewed all the coded excerpts to be sure that no alternative rendering of the salient cross-cultural differences fit the data better than the one we had developed. Our rendering held up well, and we made only minor refinements.

For team-level analyses, we reviewed all the material by team from initial and follow-up individual interviews, our meetings with teams, and our observations. We prepared analyses that addressed a specific set of topics, including the team's task, issues that members associated with cultural differences, the team's communication methods, and power relations. We tracked changes that had occurred over time, including adaptations to perceived national cultural differences. What emerged from this analysis was a pattern of dialectical dynamics not explained by the existing literature. We then reanalyzed all of the coding concerning adaptation and change, the team histories, detailed summaries of all individual interviews, and the follow-up interviews several more times to elucidate the processes in detail. We documented a common pattern that could be explained by our emergent embedded model of cultural adaptation.

## Findings

In this section we describe the embedded adaptation process we observed and the factors that heightened the importance and persistence of the salient cultural differences. We saw this adaptation process unfold in teams around issues of organizational control and authority relations, interpersonal communication, and work-related problem solving and cultivation of knowledge. We were able to track adaptations concerning three specific aspects of organizational control and authority relations with the greatest nuance. These were incompatible approaches to management structure, to review and reward systems, and to project management. These three specific examples are presented in Figures 1–3, together with renderings of the contextual factors within which

they were embedded. We discuss these three examples first in this section, since they provide the richest account of the dialectical adaptation process. Adaptations and contextual factors concerning different styles of interpersonal communication and different ways of solving work-related problems then are presented more compactly, with heavy reliance on Figures 4 and 5. The time frames for the latter adaptations did not coincide with the period of our study as well as adaptations in organizational control. Much adaptation of interpersonal communication occurred before we arrived, and adaptations concerning different ways of solving work-related problems seemed to be occurring at a relatively slow pace during our period of contact. Thus, for these two issues, we did not observe as many developments as we did concerning the three aspects of organizational control and authority relations. Figure 6 contains a general model.

The adaptation process was dialectic, incorporating the classic transformations of thesis into antithesis and synthesis—but it included additional stages, which we call divergence and workaround. Van de Ven and Poole (1995, p. 514) describe dialectical change as "recurrent, discontinuous sequence[s] of confrontation, conflict and synthesis between contradictory values or events":

> [A]n entity subscribing to a thesis (A) may be challenged by an opposing entity with an antithesis (Not-A) and the resolution of the conflict produces a synthesis (which is Not Not-A). Over time, this synthesis can become the new thesis as the dialectical process continues. By its very nature, the synthesis is a novel construction that departs from both the thesis and antithesis.
>
> (Van de Ven and Poole 1995, p. 517)

Change occurs as the balance of power shifts between entities. According to Van de Ven and Poole (1995), entities representing the status quo are forced to engage with or even capitulate to entities espousing opposing views, values, or forces as the balance of power between them or between the values, views, or forces that they embody shift.

Based on our data, we identified the entities as managers and members of the German, U.S., and Indian teams. The *thesis* is a structural arrangement, management practice, or norm that is put forward with the intention that it will be used on an ongoing basis to carry out the global work transaction. The *antithesis* is a structural arrangement, management practice, or norm that is fundamentally different from the initial thesis and is put in place with the intention that it will be used henceforth in place of the thesis to carry out the global work transaction. It is a formal change in direction. The *synthesis* is a new structural arrangement, management practice, or norm that is a novel departure from both the thesis and antithesis but builds on or blends them. It is intended to be used henceforth in the global work transaction. We define *divergence* as a rejection by one group of the other group's thesis or antithesis, or a rejection of a synthesis that has emerged. Divergence signaled that something was going wrong in the work transaction and it set off a period of talking and learning. Work needed to be accomplished while the reasons for divergence were explored, so the next development typically was *workaround*. Workarounds were quick fixes intended to keep things going until enough could be learned to craft a new, presumably permanent solution to the contradictions that had surfaced, i.e., until an antithesis or synthesis could be put in place.

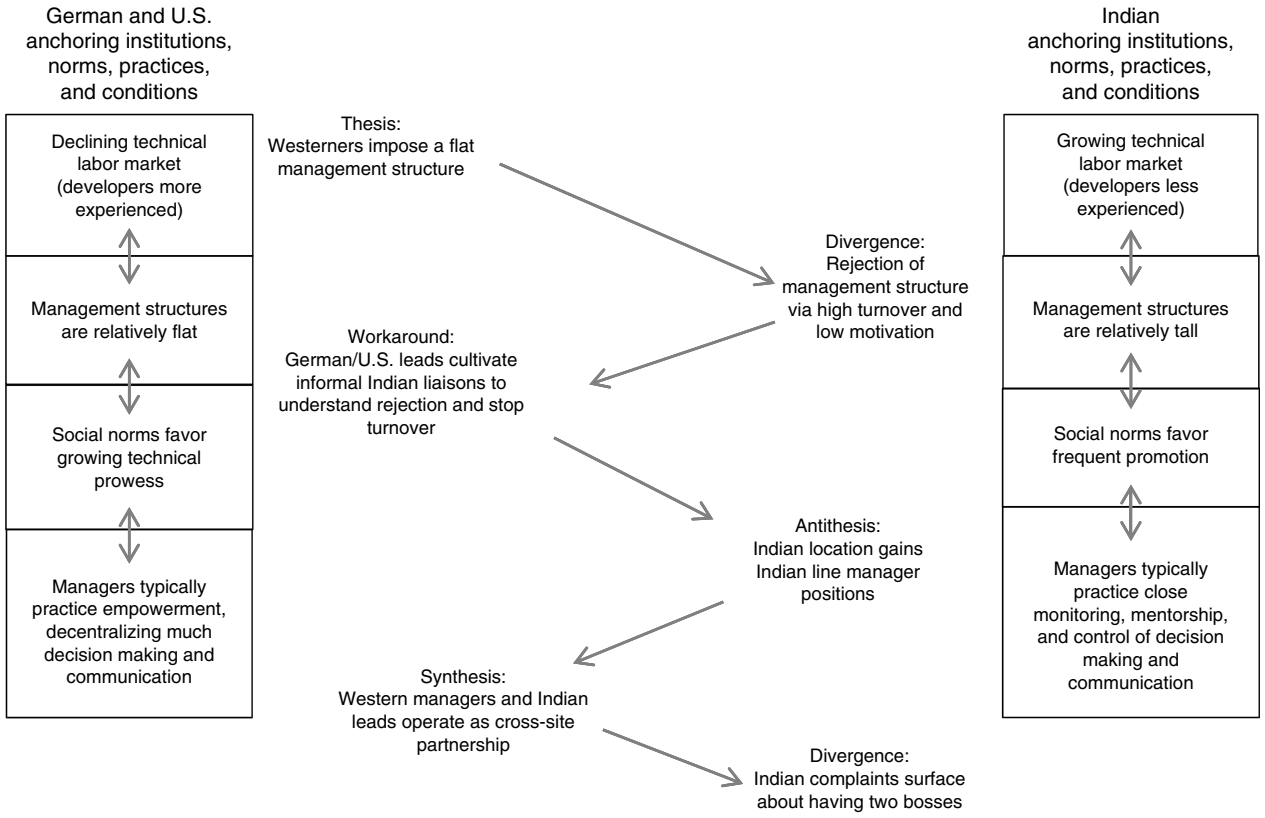
We observed influences on the dialectical adaptation process not explicated by Van de Ven and Poole (1995). Adaptation attempts were shaped, constrained, and eroded by nested sets of institutionalized structures, management practices, norms, and local conditions in which each entity was embedded. These factors were described repeatedly by study participants. We also saw how the agency that actors display in their attempts to make collaboration work can begin to undermine these same structures and conditions. Details of the dialectical adaptation processes are portrayed in the middle of Figures 1–5; the outer columns portray the framing and constraining institutionalized structures, management practices, social norms, and local conditions. In the text below, we explicate these "outer" elements and the central dialectical processes, and we give examples of the dynamic relationships that link the central dialectic with the nested outer elements.

### Dialectic Adaptation of Organizational Control: Management Structures

*Thesis*: *Flat Management Structure.* Western managers of German–Indian and U.S.–Indian teams typically commenced distributed operations by implementing a flat management structure in which line and project management of Indian developers were centralized in the western location. Remote Indian colleagues carried out discrete tasks assigned by Western counterparts. Communication typically was routed through a liaison based in the Western country, often someone with an Indian background.

German and American project managers implemented the flat management structures they were used to. In the German company that employed them, there were only three development levels below the top executives: developer, senior developer, and vice president. Many decisions were decentralized to empowered technical experts rather than being held by managers. This approach fit well with the demographics of the Western locations. Technical labor markets in the United States and Germany had been flat since the collapse of hyperinvestment in "dot-com" start-ups and financial pressures mounted to use lower-cost labor in India and elsewhere. Western developers who were managed under flat structures were typically 30–40 years in age, highly

**Figure 1 Dialectic Adaptation of Management Structures**




experienced and technically expert, and they did not require nor want close and expensive supervision. Said a German manager,

> [As a manager] you are giving direction from behind . . . . So it's more the concept of having experts who are doing the thing, who do know better than I, and who should know better than I, because they are doing it day by day.

An American developer commented,

> Yeah, hierarchy is very important to India . . . whereas for me hierarchy means nothing.

*Divergence*: *Turnover and Quality Problems.* What followed in India, however, were signs that something was not working: turnover or low motivation on the part of Indian developers and complaints from Western developers about the quality of work coming from India. Indian colleagues felt they received uninteresting assignments for which their efforts were not visible beyond their one remote contact person. They saw little potential for growth. At the same time, because they were unaccustomed to raising concerns when they did not understand something, their work often fell short of Western expectations. This reinforced a negative cycle. Given a growing technical labor market in their city, many Indian developers exercised power by voting with their feet. Turnover on some troubled projects grew as high as 30%, according to GlobalTech's site manager. A manager explained,

> The entire perception of the team and their work output depended on this one man [the Western liaison] . . . only his perceptions matter . . . . The team [in India] was in really bad shape then . . . . They don't know growth perspective . . . [or feel that] they are doing something really important.

Western managers failed to anticipate the meanings of and reception to an individual contributor model and flat management structure in the Indian cultural context. As detailed shortly, they also underestimated the importance placed on having close, personal contact with one's manager.

*Workaround*: *Cultivation of Informal Liaisons.* To figure out what was going wrong, Western project managers began to cultivate informal liaisons at the Indian location. These people often were relatively experienced developers who had prior dealings with the West. They began to explain why the isolated work structure was particularly demotivating from an Indian point of view and why concerns were not being raised. Said one German project manager of an Indian subordinate,

> I had a pretty good coach . . . there . . . has been a pretty strong Indian guy teaching me.

*Antithesis*: *Indian Line Management.* The proliferation of informal liaison relationships across sites and

the learning that came with them often convinced Western project managers that local line management to address human resource and career issues was necessary. They learned that Indian developers expected to have a personal relationship with their manager. This was particularly true for young developers who craved mentoring and needed supervision. Instituting local line management was seen as a way to retain talent in the competitive Indian technical job market. An Indian manager said the following:

> In the U.S. . . . it takes a longer time to come out of college . . . . In India, [at] 21, you're out [of school] . . . . When you manage some team in India, you need to really keep talking to them every day. It's not like Germany. Germany, somebody gives a task, they're responsible enough to do it. India . . . they still need that, you know, fatherly kind of a treatment. We always look up to the manager as a fatherly figure in India . . . . You cannot do a German kind of a management, "I see you once a week, it's okay." It doesn't work.

The importance of fatherly supervision and career development was far greater in the Indian context than in the West because of the average age of GlobalTech's Indian developers, which was 26, according to the site manager. The young age of developers, we were told repeatedly, was a product of the competitive job market for technical talent in this region of India at the time.

Over the 21-month span of our study, formal and informal line management models proliferated in the teams as project managers experimented in light of their particular situation. When we concluded data collection, some teams had their own full-time Indian line manager, who might also perform some informal project management, whereas other teams shared an Indian line manager. Still other teams continued with Western line management, supported by an Indian informal "coordinator," and yet others designated some portion of a particular person's time (as little as 20%) to formal line management at the Indian location. Although the form varied, all the adaptations constituted a swing away from the individual contributor model.

*Synthesis*: *Operate as a Cross-Site Partnership.* Once some form of formal Indian line management was in place, cross-site working partnerships between managers at the two locations evolved. One German–Indian pair, for example, reported spending up to three hours on the telephone together on a typical working day. The cross-site leadership partnerships served two functions beyond the coordination of work. They were important vehicles for intercultural learning and adaptation, and when this was not possible immediately, they served as short-term shock absorbers. For example, an Indian line manager described how he and the German project manager untangled the cross-cultural dynamics of asking for help. Indian colleagues demonstrated respect for the authority and experience of their German counterparts by asking questions without presuming to propose a course of action. The German counterparts perceived this as a failure to think for oneself. The line manager gave the following example:

> [Heinrich] told me very clearly that if our colleagues [here in India] have a clarification to be asked [from a German colleague], it's better that we do our homework and then go for the clarification . . . . Because I worked almost $1\frac{1}{2}$ years in Germany . . . I understood the German concern. [Heinrich] has been to India quite often. So both of us knew what is right, what is wrong [in the other culture], and we'd . . . communicate it to the teams.

An American project manager described how conversations with his Indian line manager helped him see the work from the vantage point of the Indian team members:

> So one thing I am really committed to, and [Indian counterpart's name] and I have had conversations on this, I really want to make sure that we find development that they are interested in . . . that is one thing I've really learned.

When a resolution strategy was not evident and formal structures lagged behind needs, members of cross-site leadership partnerships often absorbed tensions, rather than allowing them to devolve to team members. For one German project leader, the critical shortcoming was coordination with the Indian part of the team. When we interviewed him, he was personally serving, he said, as "the bridge to India," which consumed 70% of his time. Similarly, an American project manager and his Indian counterpart increased conference calls that impinged on both of their lives to spare the two parts of the team from a $13\frac{1}{2}$-hour time difference. A second German–Indian leadership pair talked about "filtering" tensions across sites when they portrayed each group's perspective and concerns to the other. We call this phenomenon "standing in the gap." When project leaders failed to find or invent adaptations that resolved conflicting meanings and practices anchored in different nested institutions, norms, and conditions, they sometimes stood in the gap themselves. They filled the need or absorbed the tension personally until a formal structural solution could be found.

*Divergence*: *Rejection of the Matrix.* Although cross-site partnerships represented a synthesis of different ideas across locations about management structure and the underlying model of authority relations, this solution eventually began to break down. Concerns were voiced on the Indian side about the matrix structure that had emerged. For example, one Indian line manager said, "Projectwise [the team members] report to a person in Germany, but HR [human relations]-wise they report to me. So there is a . . . problem which we are trying to sort

out . . . they feel like they have two managers." At the conclusion of our data collection, pressures were building for a post-partnership model that would be very different from the original individual contributor model, but the form it would take was unclear.

We have traced the evolution of management structures from a Western individual contributor model through Indian resistance, the introduction of informal Indian roles, the introduction of formal Indian roles, the emergence of cross-site leadership partnerships, and finally counter-matrix pressures. The cultural pressure on Western project managers to provide a greater management presence in India was intensified by the need for mentoring and supervision of young Indian developers who without it would seek other jobs in a plentiful local market. This sequence illustrates the decentralized and improvisational quality of the dialectical adaptation process, in which individuals and dyads sometimes had to grope for new information and serve as filters and shock absorbers.

### Dialectic Adaptation of Organizational Control: Reviews and Rewards

We observed a similar dialectical process in the changes over time in approaches to reviews and rewards in the teams, another aspect of organizational control. This process is depicted in Figure 2.

*Thesis*: *Western Annual Review Process.* The German company's standard recognition and reward systems were employed initially in the German–Indian and U.S.–Indian distributed teams, as well as the German–U.S. teams. They reflected a particular set of assumptions about what people expect and value: annual reviews and salary increases, but not necessarily a rapid rise into the managerial ranks. Although these approaches worked fine for U.S. and German developers, they did not fit the Indian context. An Indian developer who was working in Germany explained,

> And I think that's again to do with the culture . . . you see . . . differences with respect to the number of hierarchies that you have in the organization. It's much different here [in Germany]. It's a very flat hierarchy compared to in India . . . . In India, we are always known for what position. We are a senior guy or a very senior guy or something. Whereas here, you are either a development manager or a vice president. That's for [all] developers, even if you are here for 10 years or 15 years, people are still called developers, not senior developer or senior, senior developer. Whereas in India, every two years you need this kind of a push to see that—oh yeah, I am growing. But here . . . they grow with respect to technical knowledge and also surely the salaries also grow. But . . . it's not directly connected to a position.

*Divergence*: *Turnover and Quality Problems.* When problems surfaced, German and U.S.-based managers sought to learn more about Indian expectations and values through the informal liaison relationships and formally appointed Indian line managers described previously. They learned that promotion and rewards were of intense interest to the Indian developers, particularly given the strong social norms in India favoring position-based authority and the red-hot technology job market. Illustrating the external pressures, a young developer in India explained the expectations of his parents and friends that he be promoted, saying,

> I need to see . . . that I am growing . . . . Otherwise they are saying, "Oh is there something wrong. You are not growing anymore."

Said another,

> We feel sometimes really bad when our colleagues, ex-colleagues in universities are in a higher position than we are.

Developers were hungry for feedback on their work and expected to receive quarterly performance reviews and raises. The nature and intensity of the expectations were different than managers were accustomed to in the United States and Germany, where the developers tended to be older and where a rapid rise across multiple hierarchical levels was not expected. Said an Indian line manager,

> In India . . . the perception [of benefits and pay] is completely different from the German side . . . . And the economy in the [Indian] IT [information technology] industry . . . we expect 20 or 30% salary hikes, which is simply unheard of for a German company.

Another Indian line manager described the discussions that went on:

> When a manager sits in Germany, he doesn't understand because his benefit or pay system or monetary system is different . . . . So when you complain to a German manager saying, "My pay is less or I am not getting this benefit, or I am not getting this bonus," he is very alien to the problem . . . . No matter how much you explain to them, he says, "In Germany we don't give quarterly bonus." Fine, but you give it in India, so you need to give it. He says, "No, how can I judge in three months?"

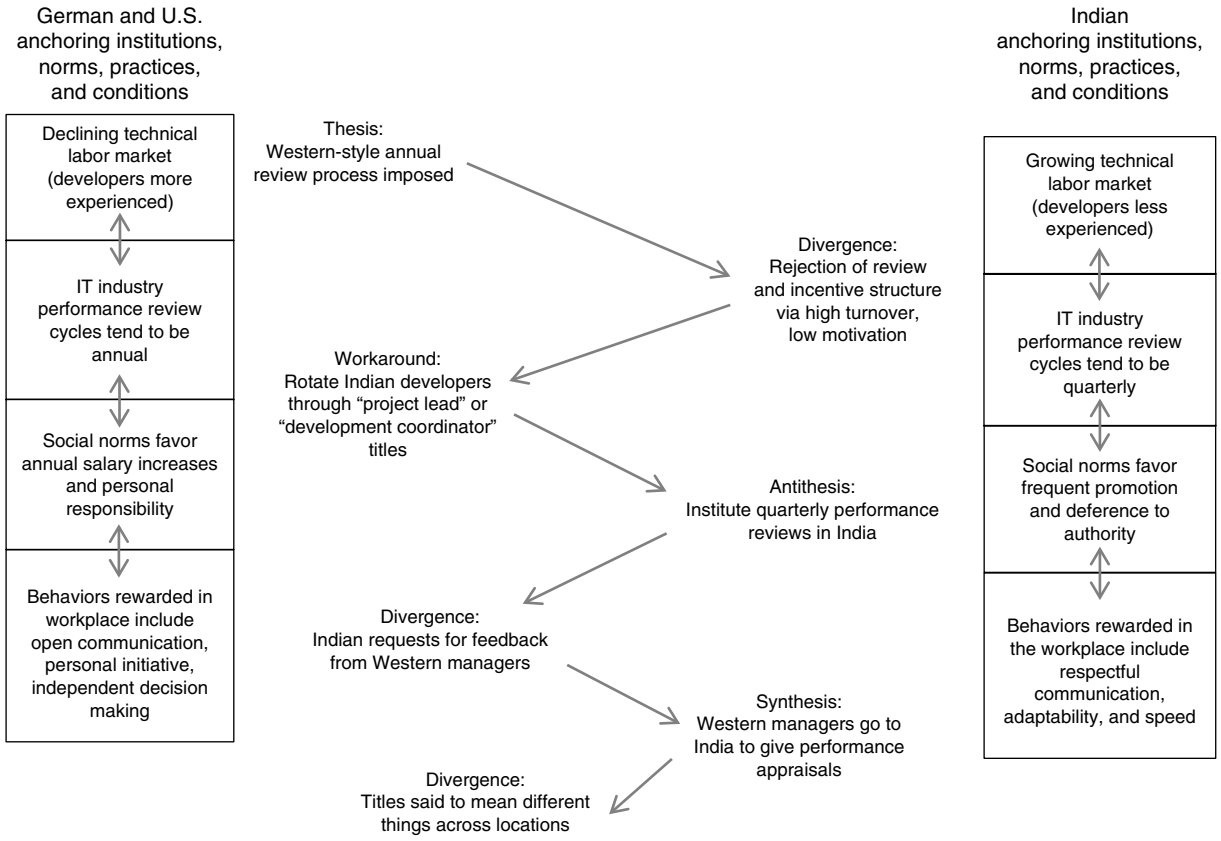
*Workaround*: *Rotation of Team Lead Position in India.* While the debate went on, some Indian line managers implemented stopgap solutions to retain developers despite the restrictions of the Western incentive system. For example, one manager for a U.S.–Indian team rotated developers through the role of local "project lead":

> I made two of the guys—I promoted them even though there was no real [worth for it] and that also worked . . . . Role is very important to them . . . . I ensure that at least for name's sake I make one of them project lead for six months so [the next one] for the next six months rotating.

Another Indian manager talked about giving developers "the feeling of going up the hierarchy":

> The salaries and the benefits and how we bundled is for Indians to go up the hierarchy, or at least have the feeling

**Figure 2 Dialectic Adaptation of Reviews and Rewards**




of going up the hierarchy. Which is not so much emphasis as in Germany, as far as I could observe. They are pretty happy doing what they are doing. But here, it's much more focused on hierarchy.

Another articulated bluntly the link to retention:

> Everybody wants to be a lead for something . . . . [If] they cannot grow . . . they will leave.

Creating the appearance of a promotion is an informal move that absorbs tensions temporarily in the face of an impasse between two sets of nested institutional structures, management practices, and social norms. In this case, different cultural expectations concerning hierarchy and position were further reinforced by the nature of the job market and economy in each location.

*Antithesis*: *Institute Quarterly Reviews in India.* Eventually, Indian line managers convinced their Western partners that it was necessary to review Indian employee performance quarterly and to provide more frequent bonuses and changes in title. An Indian manager described the new titles:

> In Germany it's a very [flat] structure . . . . Here . . . you need to grow constantly . . . . We need to deal with such kind of things, [so] we have . . . he is called a development coordinator or a technical lead, which is still the same, I would say. Just fancy names. So he is the person with a lot of experience.

A young developer, for example, introduced himself to us with careful specification of his level, saying he was "a senior developer with coordinating functions," because he "is supposed to move up soon to the coordinator level."

The new quarterly reviews and rewards were administered by local Indian managers in consultation with the German and U.S. project leads because the Western leads rarely, if ever, travelled to India and were unfamiliar with the developers, their expectations, and their work. This structural adaptation of reviews and rewards addressed some pressures, but the situation remained unstable.

*Divergence*: *Requests for Feedback from the Power Center.* Despite the new administration of rewards on the Indian side, the Western locations continued to be recognized as the power centers. It quickly became clear that Indian developers wanted to know that not only their Indian bosses but also their bosses' Western bosses knew the work they were doing. As an Indian manager explained,

> They were not getting a huge share of credit . . . from the top management . . . . If your boss's boss [in Germany] says, "Oh, you've done a good job." Then, I think, "One, he knows what I've done. Two, he's saying you've done a good job." . . . It also depends on the stage of your

> career . . . if you are a new guy . . . and you've done your first or second or third good thing, then somehow it's much more important . . . [that] he knows what I have done.

German technical leads and project managers in turn came to recognize the importance of communicating their support to Indian developers, which some called "visibility":

> I think it's very important for our colleagues in India that the German guys, also that the German management, stand behind them . . . . They need us to be supportive because if anything's going wrong, we will have to help them . . . . I think it's also important for them to see who are the guys they are working for . . . . So it's important, this visibility to the colleagues in [Indian city].

*Synthesis*: *Western Managers Travel to India to Give Performance Appraisals.* As German and American project managers became more aware of the importance Indian developers placed on being recognized and feeling supported by Western managers, and the connection to motivation and retention, they started to travel more frequently to India. The change was evident across the time period spanned by our interviews. In the first year of our study, Indian colleagues usually travelled to the Western locations rather than vice versa. Two years later, however, all three German managers of the German–Indian teams had initiated quarterly trips to India to meet individually with developers and give performance appraisals. In addition, the U.S.-based manager of one of the most highly regarded U.S.–Indian teams had begun to make two trips per year to India, having previously made none. Managers and team leads of most of the other U.S.–Indian teams had begun to make or plan trips to India. One German manager said the following:

> One thing that I do in [Indian city], I speak to each and every [one]—I don't talk only to the development manager. That's anyway [what] I'm doing every day . . . . I talk to the individual developers . . . . They show me what they have done.

Direct conversation and performance appraisal also helped Western managers instill the new behavioral norms they were looking for: personal initiative, independent decision making, and open communication. An Indian developer suggested that such reinforcement was important:

> So that was a big learning experience for me, to be totally independent. I mean, make decision on your own and it is not easy to learn. I mean, one night you can't learn it.

The new practice of Western managers making trips to India to give performance appraisals is a synthesis of the tensions between Western and Indian expectations for recognition and rewards. Both were shaped by cultural ideas about authority and position, but not by culture alone. As depicted in Figure 2, cultural norms were nested with a set of economic and institutional factors, such as the existing labor market and norms in the IT industry, which together made the differences across locations more intractable, giving rise to the dialectical, adaptation process.

*Divergence*: *Titles Said to Mean Different Things Across Locations.* The tension around rewards and recognition across the nested systems resurfaced in a new form after the rewards system in India was structurally altered. German, American, and Indian respondents began to point out that titles meant different things across locations. For example, an Indian manager said,

> The senior developer here is not as senior as the name suggests. This has been a problem . . . because we go to [Germany], the technician there and here is a little bit different. We say—oops, if you are senior development, then what am I? Because [the Indian] guy is still a kid.

Similarly, an experienced German developer mentioned that his team has a new lead in India but immediately added that "the know-how" is in Germany:

> He is team lead but the know-how is on the [German] side, let's say it that way.

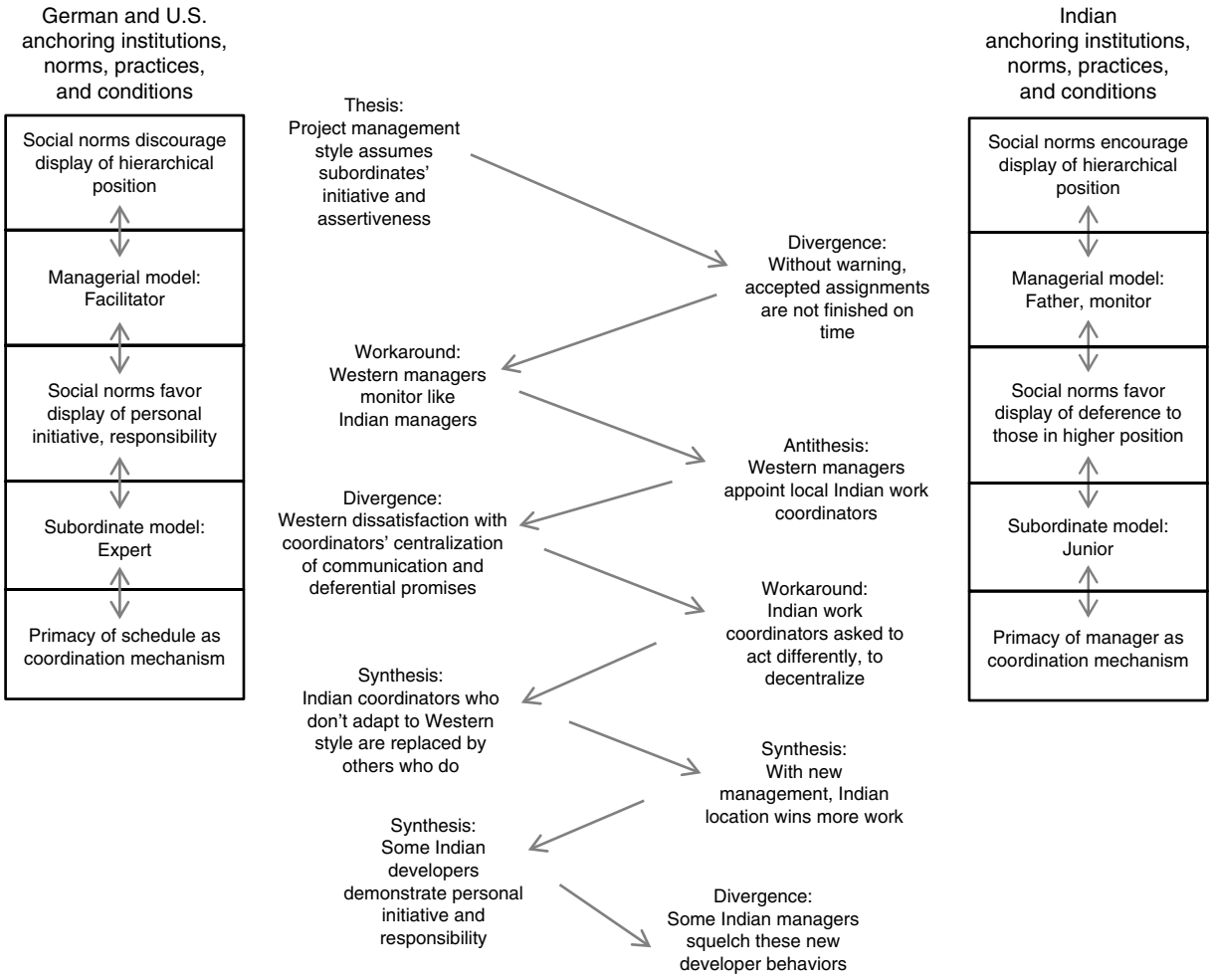
In this sequence, we have described the tensions created by different expectations across the Western and Indian locations concerning rewards and recognition. Although cultural values played a significant role, the intensity of Indian desires to demonstrate growth was heightened by the age of developers and the competitive local economy. Western developers placed less importance on achieving position in a hierarchy, but they also were older and faced job markets that were flat or in decline. These factors aligned with culture in such a way as to make differences across locations more resistant to change. We also illustrated learning processes across locations, the use of stopgap measures to vent tensions (e.g., rotating team lead positions in India), emergence of a synthesis of Western and Indian preferences, and the travel of Western leaders to India to appraise performance. In every German–Indian team and in the highest-performing U.S.–Indian team, there was a marked increase in Western travel to India to increase visibility of the Indian developers.

### Dialectical Adaptation of Organizational Control: Project Management

A third major dialectical adaptation process concerned project management in the German–Indian and U.S.–Indian teams (see Figure 3).

*Thesis*: *Western Project Management Assumptions.* Initially, the German and U.S. managers approached their globally distributed teams with project management expectations shaped by their own context. By "project management," we refer to issues around work timing and delivery, the monitoring of progress, and escalation

**Figure 3 Dialectic Adaptation of Project Management**




of problems. The Western project manager model was described as a coach or facilitator who, as noted previously, "giv[es] direction from behind" technical experts who exercise considerable responsibility. When things did not go as expected, a series of dialectic adjustments followed.

*Divergence*: *Work Delivery Problems.* A major issue was differences in the forthrightness of communication, particularly across hierarchical levels. German and American managers expected that Indian developers would raise concerns or ask questions if they had trouble with an assignment. They learned with experience, however, that developers often would not do so. They also expected that developers would take personal responsibility to align their efforts with the stated deadline, without reiteration by a manager. They learned, however, that if managers do not monitor progress closely, Indian developers might conclude a task is unimportant. The following story is typical:

> I made a very bad experience. I gave the development of one topic, big topic, to [Indian city] and . . . guys all told me, "Yes, no problem. I will do this. I'm able to do this." And he started on this issue . . . . And somewheres, oh, about 70% of the time, I went back to the guy and asked him, "And now your thing should be finished for testing to show it to me." He said, "Yes, I'm ready. I finished." Then I made some very first testings and I think nothing was done. So I think it was my fault, I should have monitored him, this guy, much more often in much more detail what I didn't done before . . . . I don't come up to this guy maybe on a daily base to ask him, "How far are you already or do you have problems?"
>
> Because I thought that he has the same logic as me. If I give a topic to a developer here in Germany and say, "I need this in two weeks' time. It must be finished," then it will be finished in two weeks. And if not, this guy will come to me and say to me, "Sorry, but because of this blah, blah, blah, it's not possible." . . . But I never got this feedback from this guy in [Indian city] and I got similar [accounts] from other colleagues.

*Workaround*: *Western Managers Monitor Like Indian Managers.* As a stopgap solution, the remote Western managers began to question Indian developers more often about how things were going and stress the

importance of the task. In other words, they began to act like Indian managers. For example, one German manager said the following:

> If I give a task to India, I have to make a clear monitoring. So this means day by day, I have to ask them, "How are you? What's the process? Have you finished? Have you problems?" And so on. This must be done.

And another said the following:

> I now have a much better understanding about the Indian culture. So I have meetings with Indian developers, I have a very good understanding if they tell me something, then I always know—okay, hmm. They have some difficulties in telling you really the truth. They say, "Okay, everything is all right, all the lights are green." And I know if I do this in Germany, I can trust it. They are normally a little bit more pessimistic. In India they are extremely optimistic. And they also tend to tell you the light is green till the very last minute and say, "Okay. Now it's red." However, normally if you have some experience, you can handle that.

*Antithesis*: *Indian Work Coordinator Appointed.* The solution of intensive remote monitoring tended to be temporary. The project managers were, in effect, absorbing within themselves a tension of the cross-national interface. Eventually, they sought a longer-term structural solution. They appointed Indian development coordinators or expanded the role of local Indian line managers to project oversight. Said the manager of a German–Indian team,

> I'm not able to monitor each task from another location . . . . And in some cultures maybe you have to do this. So I think . . . it was the right decision to have one manager on-site who is the human resource manager, and then in addition, he is also responsible for the project.

We see here again the sequence of an informal, tension-absorbing move, personal monitoring, being followed by a structural solution, appointment of an Indian development coordinator.

*Divergence*: *Dissatisfaction with Indian Manager Control.* Instituting Indian development leads often failed to resolve the tensions around project management. The new Indian leads did monitor the progress of work but, in the eyes of German and U.S. project leads, they also blocked direct communication, often routing all cross-site communication through themselves. Both Western and Indian managers also said that Indian development managers sometimes would overpromise about what their group could do and how fast. A German manager described the sequence of events:

> Well I think this is a first approach. You get a team manager [in India], let's say, [and you offer] responsibility on his shoulders. And somebody wants to call some colleague in Germany, first he has to ask his manager. "Is this okay?" . . . If the team was so dependent to the team manager, they had no freedom and . . . they have not been able to grow.

Several Indian managers described how they indeed managed cross-site communication. One said the following:

> We don't want the developers directly talking to people over there [in the U.S.] because then it's a multiway channel, and we don't know what's happening. So we want to keep the channel of communications very clear.

The American technical manager of this team described how he exhorted developers based in India and the United States to communicate directly. He was unaware of the rule on the Indian side of the team.

It is important to note that, from the point of view of many Indian managers, there were reasons in addition to cultural notions of authority relations for controlling communication. They pointed out that a firm managerial hand was required because of the young age of many of their developers. They also stressed that the Indian location was trying to prove its economic viability and that they did not want Western managers to see any behavior that might reflect badly on these prospects. One said,

> The manager's role in India is to get more jobs. Proving [the] team is really efficient [and that] he could even take extra load by hiring people.

An American manager of a different team made a similar observation:

> Management in India will never . . . push back against anything. Partly because they're trying to establish themselves as a viable unit and partly for that cultural thing.

Consistent with our nested model, the combination of these cultural, demographic, and economic factors made the behavior more resilient to change.

*Workaround*: *Encourage Decentralization.* The first response of Western managers to Indian managers' centralization of control was to institute practices that brought about direct contact between developers and between Indian developers and themselves so they could gauge how things were going. They also learned how to read between the lines. For example, one German manager instituted what he called a weekly cross-site "info session" at which each developer personally explained what he worked on during the past week and planned to work on in the week ahead. When we asked, "[So] it's not just the manager in India that gets into this weekly meeting?," he said "No, no, no." Another German manager abandoned the weekly cross-site meeting, however, because only the Indian development manager would speak. Instead, he used his regular trips to India to talk individually with developers. He also funded developer travel between sites to facilitate direct developer relationships.

Meanwhile, some Indian managers modified their project control practices to decentralize communication and responsibility in accordance with the wishes of their

Western colleagues. In a follow-up interview, the Indian manager of a U.S.–Indian team said that his most important adjustment had been shifting from "micromanagement" to decentralization of ownership:

> The members have to be motivated . . . that's . . . the problem I had to start with . . . [so] I went in to say, "This is what you need to do" . . . they had a sense of responsibility. "OK, he's giving me more responsibility . . . . Now I have to deliver.

Another Indian manager said the following:

> We always look up to elders for decisions . . . . Support is not wrong . . . . We always expect managers to come and tell us what we need to do . . . . So that mental framework should change . . . . I as a manager want them to change.

*Synthesis*: *Replace with Indian Manager Who Will Act Like a Western Manager.* If the strategy of encouraging direct contact did not produce the desired results, Western project leads took more formal action: they replaced Indian managers who were centralizing responsibility and communication in themselves and replaced them with Indian managers who would act more like German and U.S. managers. One said,

> It was . . . a counterpart in India with the same [ideas about] freedom . . . . The team members . . . will take the responsibilities if you will let them . . . . It was a new manager and it was very important for us to fix, to find a manager who is working in this way.

This is a synthesis of the opposing tensions: the Indian locations gained more local control if Indian development managers would exercise control in ways consistent with Western expectations.

*Synthesis*: *Delegation of More Work to India.* With this sort of project management in place in India, Western managers became more willing to delegate chunks of the projects for which they were responsible. The synthesis released energy that had been bound up in the dialectical struggle. For example, replacement of an Indian development coordinator who was thought to be too controlling was a turning point that resulted in the transfer to India of all maintenance on a particular software product.

*Synthesis*: *Some Indian Developers Embrace Personal Authority.* Despite adaptations and some successes, however, tensions remained in most of the teams we studied. A considerable number of Indian developers spoke enthusiastically in their interviews about what they called Western "professionalism" that gave them greater responsibility at work than they were used to. Then they made critical comparisons with Indian management:

> Something I really liked was being given the independence and not being all the time controlled by a manager to, "Do this. Don't do this . . . . You have to get back to me. I'm the boss."

Another said the following:

> The plus point in working with [Western managers] is that they give you a lot of responsibility. They say, "OK, you are responsible. You take the decisions."

*Divergence*: *Some Indian Managers Discourage New Behaviors.* Whereas many Indian developers reveled in the greater responsibility they were expected to exercise by their Western bosses and collaborators, some Indian managers subtly discouraged this change. Change in the nature of responsibility at the Indian developer level meant change in the nature of responsibility at the Indian managerial level. Consistent with our general model (see Figure 6), such change aligns expectations *across* contexts, but it pulls out of alignment expectations *within* the Indian context. Although Indian developers could gain more authority, a commodity that is precious in their context, their managers were expected to give up some of the command and control they had worked so hard during their careers to win. During observation of a German–Indian team, we noted an exchange that embodied the tensions being worked and reworked within and between the two nested systems. The team was one whose German project manager had worked hard to encourage independent problem solving among the Indian developers. As we watched, a young, new Indian developer approached his Indian development manager to say that he had spent a day trying to figure out a technical question on his own but now needed the manager's help. The local manager's reply was not without reason yet decidedly different than the message the project's Western manager had been sending: "Don't spend a lot of time," he snapped, "trying to understand something on your own."

We have focused here on the experiences of German–Indian teams and U.S.–Indian teams. Members of German–U.S. teams did not describe the same degree of tension concerning organizational control and authority relations. Both American and German participants in our study consistently described their cultural norms as privileging expertise, the exercise of initiative, empowerment, and decentralization. By contrast, Indian participants described cultural norms focused on deference to authority, centralized control, monitoring, and attaining position. In addition to these characterizations of cultural norms, however, participants cited other important factors: differences between the West and East in the ages and levels of professional experience of developers and in job market conditions. We have argued that these differences made the cultural differences more salient and resistant to adaptation. By contrast, the commonalities between the German and American demographics, experience levels, and economic conditions supported similar models of authority relations. It also is worth noting that the German–U.S. technical relationship had been in place longer than the relationships involving India. Important adaptation processes

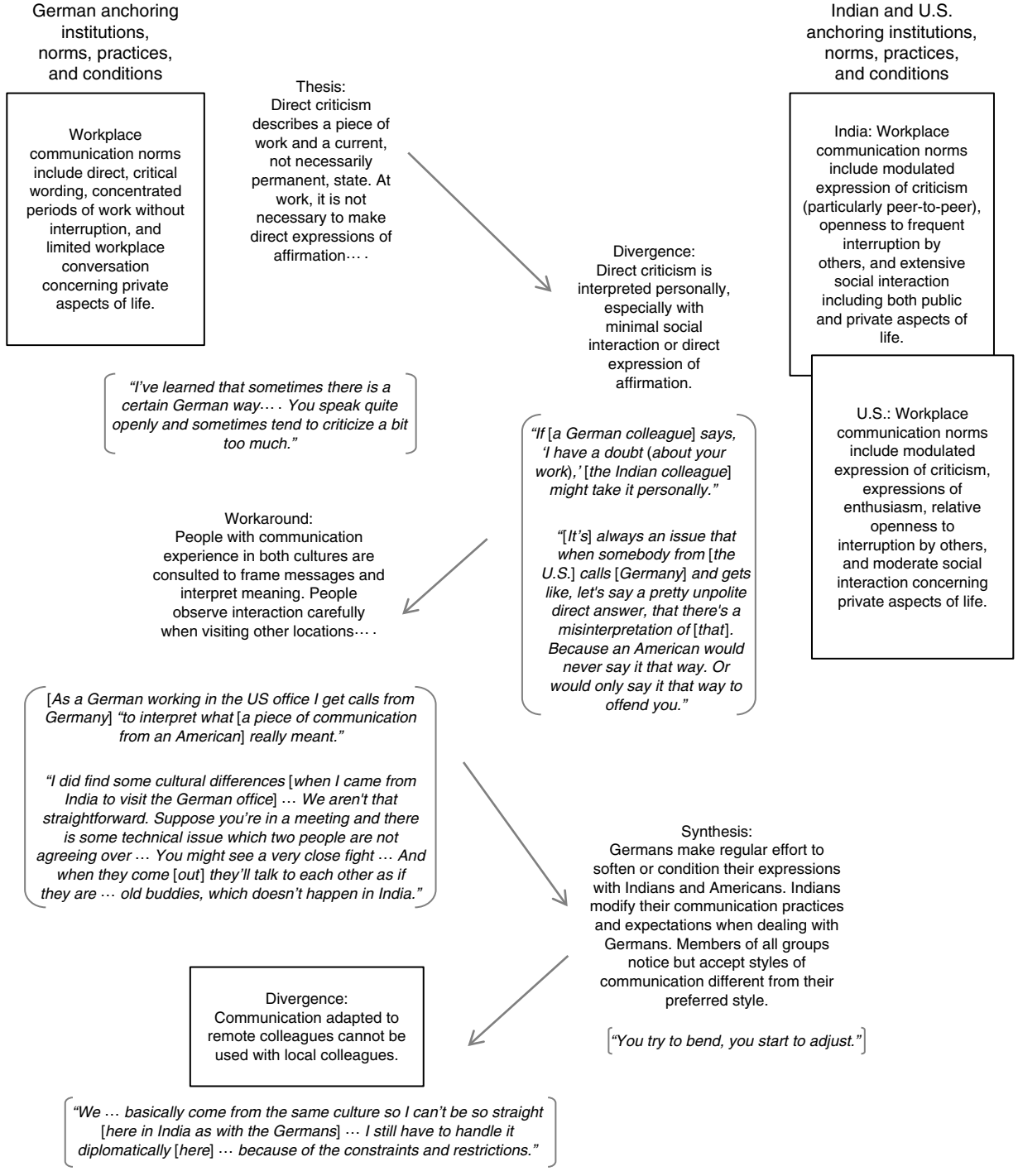
had likely occurred and been institutionalized before the advent of our study, and we therefore could not observe this process. Some German respondents explained the lower level of German–American cultural tension by noting that the German company was "Americanized." They cited the use of first names throughout the company rather than titles and last names and growing attention to marketing together with engineering considerations.

### Dialectic Adaptation of Interpersonal Communication

Having explicated three dialectic adaptation processes in detail, we now summarize two additional examples, relying on details presented in the accompanying figures.

Despite the similarities in control and authority relations between the U.S. and German groups, we found the biggest gulf in norms of interpersonal communication

**Figure 4 Dialectic Adaptation of Interpersonal Communication Norms**



to lie between the German style and the styles of the other two cultural groups. Of particular importance was a German tendency to give unvarnished criticism in contrast to the softer modes of criticism of the other two groups. German colleagues also saw themselves, and were seen by the other groups, as preferring quiet periods of work without interruption and relatively little blending of professional and private life. Indian colleagues described their interpersonal norms at work relative to American and especially German colleagues as incorporating a greater integration of social and task elements, a preference for a noisier, interactive atmosphere and openness to interruptions. American colleagues were described by all parties as "friendly" in manner and generally approachable in person and emails. The differences are consistent with descriptions in prior cultural research (e.g., Hall and Hall 1990, Nees 2000, Perlow and Weeks 2002, Schmidt 1999, Stewart and Bennett 1991) and with our observations.

The thesis about workplace communication embedded in the German style was that direct, critical wording should be taken, as one respondent said, as a statement about a piece of work and not taken personally. It was not considered necessary to soften critical assessments with affiliative language. American and Indian colleagues, however, were often shocked by direct criticism in German communication. Divergence was followed by a period in which people used informal measures to gather more information about communication differences, for example, consulting colleagues from the other culture or colleagues who had extensive experience with the other culture. We did not find, however, the sequences of formal structural interventions and modifications that characterize the previous examples. Respondents described gradual learning and mutual adjustment. They also said, however, that local communication norms held sway at home because of "constraints and restrictions." For example, an Indian developer described how he could take his coffee back to his desk while visiting his team's task-focused U.S. location but was called back to the twice-daily coffee klatch when he returned to India:

> [In the U.S. lab] there you walking down to the cafeteria and usually picking up a coffee and coming back is okay. Here . . . my colleague will ask, "Hey, why didn't you call me? I would've very well given you company." Because giving your company is a courtesy here. It may not be courtesy there. So you cannot integrate everything into this place.

A key reason that interpersonal communication process differs is that it often can be compartmentalized between colleagues of the same versus other cultures. When people try to use a new communication style at home with local colleagues, however, they often encounter social pressure to conform.

### Dialectic Adaptation of Work-Related Problem Solving and Cultivation of Knowledge

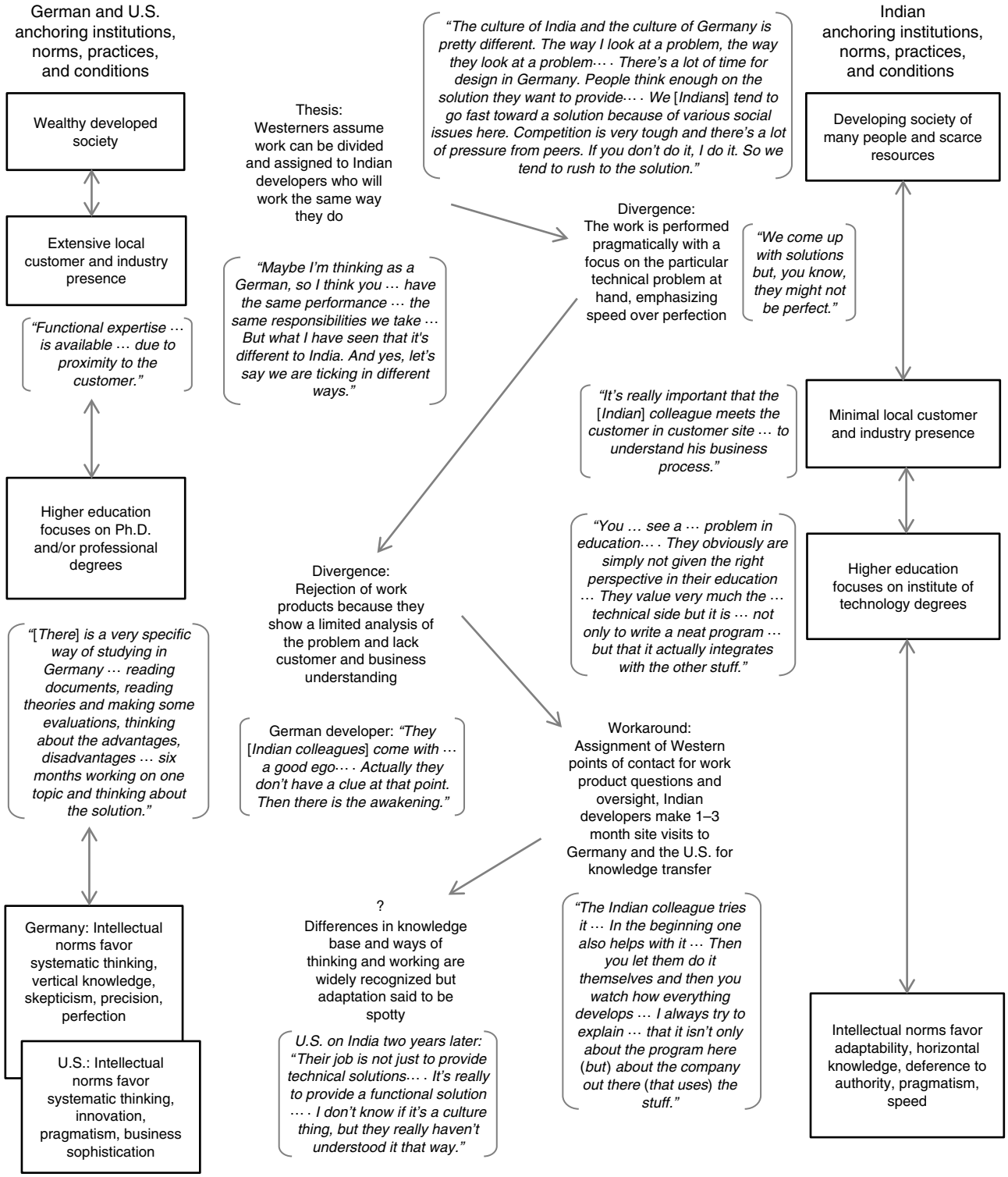
Respondents also spoke extensively about important differences between German, U.S., and Indian developers in the kinds of knowledge they cultivated and the ways in which they approached and solved work problems. In this case, however, the anchoring institutions, norms, and meanings were so powerful, reciprocally related, and slow to change that interaction in the teams was little able to affect them. When we did our final round of interviews, the same key issues were raised concerning differences in work-related knowledge and problem solving as in our first interviews 12–18 months earlier. Experimentation with solutions had occurred but with little effect. Details are presented in Figure 5.

German developers were described by themselves and by members of the other cultural groups as preferring to accumulate deep expertise in a particular subject matter area and to focus on expertly engineered technology. American colleagues were seen by themselves and others as having thorough knowledge but focusing somewhat more than their German collaborators on the look, feel, positioning, and presentation of products in the marketplace. They were perceived to be more customer than technology focused relative to German and Indian colleagues. Indian colleagues described themselves as preferring broad rather than deep knowledge and as quickly seizing on new technologies.

In approaching work problems, German colleagues saw themselves and were seen by the others as taking a scheduled, systematic, meticulous, deliberate approach, with a deep discussion of all likely issues at the outset. Americans were seen as somewhat more pragmatic than perfectionist in standards and initial assessment, and they were seen as also more independent and innovative in their approach relative to their German counterparts. They were seen as less systematic than the German colleagues but more systematic than the Indian colleagues. Indian colleagues were seen by themselves and others as taking the most pragmatic approach to problem solving. Whereas their German counterparts preferred to do one thing at a time, they said they preferred to do multiple things at the same time and described themselves as adaptable and fast.

Respondents went beyond associations with national culture to also describe how differences were nested within local institutions and conditions: the nature of economic and education systems and the state of the local economy. German and American developers were more familiar than Indian developers with the products, markets, and functionalities served by the software they were building. These differences in work-related knowledge were grounded in the greater presence of customers, markets, and industries in the Western locations and the relative newness of the Indian operations. Indian

**Figure 5 Dialectic Adaptation of Work Knowledge and Problem Solving**




developers, for their part, said they sought broad knowledge across technical areas and worked fast as a way to maximize their opportunities in a crowded, competitive society.

The problem remained of how to actually inculcate deep understandings of unfamiliar business processes, the interconnections in the development environment, and customers' points of view. Western mentors—particularly the German mentors—hoped to change fundamentally their Indian colleagues' ways of thinking about and working on problems. Yet according to both Western and Indian accounts, these modes were deeply

embedded in people's educations, experience, and societies. Whereas a number of Indian colleagues said they admired the German approach, others pointed out the strengths of what they saw as the Indian approach. German and American colleagues did not express desire to emulate the more flexible Indian approach, although they did sometimes praise the skills of their Indian colleagues. It was not clear that differences in work-related knowledge and problem solving were changing or were going to change. Furthermore, if change did occur, it was not clear what direction and form that change would take. This is a major point of difference between this dialectic tension and the tensions concerning interpersonal communication and the three specific aspects of organizational control and authority relations, for which we could detect the direction of change.

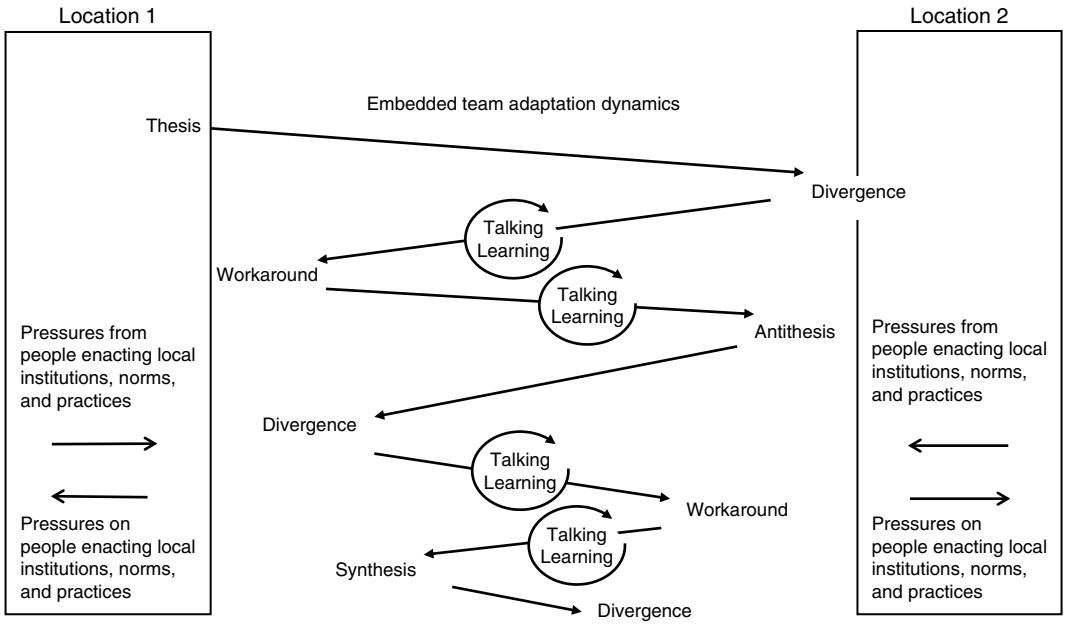
## Discussion

### An Embedded Model of Cultural Adaptation in Global Teams

Based on our inductive work, we propose an embedded model of cultural adaptation in global teams. In other words, we seek to direct attention to the dynamic processes that link global team members and managers to local institutions, norms, practices, and conditions and also shape and constrain intercultural adaptation within the team (see Figure 6). Adaptation requires team members and managers to resolve contradictions that surface as people embedded in different local cultural contexts try to work together. This generally requires periods of talking and learning and then experimentation to understand the nature of the difference and craft a new approach. When people adapt their behavior or the systems under their control, they may then find their efforts to be out of alignment with and discouraged by people and institutions in their local context. For example, Indian developers who embrace German and U.S. exhortations to display more initiative and personal responsibility are squelched by some Indian bosses who feel their traditional role is being eroded. This can set off additional iterations of the embedded adaptation process.

The relevant local institutions, norms, and practices may be nested, as we depict in the outer columns of Figures 1–3 and 5. According to Perlow et al. (2004), this means that they reinforce and are reinforced by the same interaction patterns. For example, in our data we saw that predominant local norms of authority relations were aligned with professional job market conditions, developer age, and experience levels, as well as the cultural and organizational valuing of promotion. Reciprocal reinforcement among these nested features could mean that they are slow to change. This is a point made by Perlow et al. (2004) on the basis of their cross-sectional data. We advance this work by showing exactly how changes in interaction patterns somewhere across or within nested systems can make contradictions evident and set off ripple effects. Sometimes the ripple effects can erode the nested status quo, as we would see when a trend catches on. We show how individual actors experience, interpret, cause, respond to, and seek to manage these ripple effects. These activities constitute the dialectic cultural adaptation process. Our embedded model of cultural adaptation in global teams brings to the forefront new dynamics that merit research and practical attention. We draw on the Perlow et al. (2004) nascent model of nested structuration as a starting point to describe

**Figure 6 An Embedded Model of Cultural Adaptation in Global Teams**



what we see in our data, and then we, in turn, offer a new more complex and dynamic rendering of nested structuration.

Our embedded model of cultural adaptation is very different than the views offered by the global teams literature to date (e.g., Adair et al. 2006, Earley and Mosakowski 2000, Gibson and Gibbs 2006, Jarvenpaa et al. 1998). Previous work tends to be aligned with a static entity view of culture that assumes that team intercultural adaptation occurs when individuals modify the way they think and behave and what they value. Previous work emphasizes effective interpersonal communication and the creation of internal team states such as psychological safety, shared identity, and trust to enable modifications. The work does not take into consideration the embeddedness of individuals and teams in the cultural systems all around them. By contrast, a dynamic systems view of culture (e.g., Kitayama 2002) highlights how these cultural systems and subsystems—e.g., people enacting norms, institutions carrying out routines–can trigger and reinforce culturally specific behavior. For example, grown children may dread being questioned by parents about why they were not promoted, and developers may do less than perfect work quickly to be sure they do not miss out on scarce opportunities. In our view, global team intercultural adaptation involves changes in how individuals think and behave, but it also involves challenging encounters with and attempts to resolve contradictions among impinging cultural systems. Our shift in emphasis can be equated to the shift in research on colocated teams from a preoccupation with their internal dynamics to balanced attention to their internal and external relationships (e.g., Ancona 1993). Indeed, distributed team collaboration may sometimes amount to a fragile link spanning powerful nested local systems. It is possible that research to date has overemphasized the figural nature of global teams on the ground of the other systems in which members are embedded.

Our research describes specific adaptation dynamics such teams can expect to experience: sequences of moves and countermoves through which individuals and groups reject each other's preferred approaches in key domains such as authority relations, communication, and problem solving and press for palatable alternatives. For example, we described how Western project managers proceeded on the basis of management structures and practices that they took for granted, their thesis. They found out, however, that their flat management structures and annual review processes meant something different in the Indian context. Indian developers rejected German and U.S.-centric management by voting with their feet in a competitive local job market because of what they saw as a lack of regular signals of growth. This divergence was followed by a period of talking and learning during which team leaders and members explored the different meanings that were now visible and tried to come up with solutions. Talking and learning occurred in cross-site liaison relationships, in conversations with people who had worked for periods in the other countries, in the debate concerning pay and benefits, in reeducation through performance appraisals, and in other such encounters. At the same time, teams were interdependent to complete work, so team leaders often had to invent workarounds to keep work moving forward during the search for intersubjectivity and the invention of formal solutions. Sometimes they came up with a quick fix, such as rotating the title of team lead among members to give them "the feeling of going up the hierarchy." Sometimes they stood in the gap themselves, personally absorbing or filtering tensions for the global team. They served, for example, as "the bridge to India" before eventually instituting structural changes. This utilization of informal and individual-level solutions is a product of the constraints and restrictions in the globally distributed system. People exercise agency in the face of incompatible norms, expectations, and practices with the potential of gradually changing them, albeit with effort and stress. Thus, we show the importance of human agency as a creative force at the intersection of competing institutional orders, a point also highlighted by Levina and Vaast (2008) and Zaidman and Brock (2009). We illuminate the specific dialectical struggle these agents face—the cycles of surprise, desperate measures, search for enlightenment, invention, hope, and often disappointment. Our work suggests that more research is needed concerning the stress such agents may feel and the personal capacities that contribute to success.

For most of the issues we examined, the dialectic process evidenced several iterations. When people thought they understood the nature of a contradiction or incompatibility, they invented a solution that was antithetical to the initial thesis that had failed. The antithesis was supposed to be a solution that gave the other side something it wanted or needed but that also would work in the system as a whole. For example, the flat management structure was abandoned in favor of the creation of local Indian line management. These structural solutions, however, were typically followed by another episode of divergence. When German and U.S. team managers instituted Indian team leads, they expected them to facilitate direct communication like Western team leads, only to find that they routed all communication through themselves, consistent with the Indian interpretation of what a team lead does. Finally, we have described moves that represent syntheses of prior theses and antitheses, such as the evolution of cross-site leadership partnerships after experimentation with both Western-centric team control and use of local Indian managers. The inherent contradictions in the distributed system even then resurfaced. For example, operation through cross-site leadership partnerships eventually gave rise to complaints about unclear lines of authority and dual reporting relationships.

We depict three sequential points of synthesis in one of our examples, the adaptation of project management. These could all be seen as aspects of one complex synthesis, which incorporates the replacement of many Indian managers, the more confident shifting of work to the Indian location, and a shift in Indian developer behavior. We chose to portray three points, however, to illuminate how the balance of power shifts with each development. Western managers exert power by replacing Indian managers who have not adapted to their preferred style, yet this in turn allows the Indian location to gain power by winning more work. Indian developers begin to align themselves with the ascendant Western notion of personal initiative and responsibility, but this evokes a backlash from some Indian managers. These developments were not simultaneous, nor were they rigidly sequential. Our portrayal demonstrates that a complex synthesis can involve several interrelated developments.

The dialectical adaptation process results from interdependence across incompatible nested resilient systems. When each side provides important resources to the joint undertaking, solutions that satisfy one side at the expense of the other eventually invoke a swing in the opposite direction. Future research might explore the question of whether divergence always is followed by a convergent turn (a workaround or attempt at a formal solution). One could imagine instances of divergence that reveal system incompatibilities so deep that the interdependent relationship is abandoned or fundamentally altered. Our work crystallizes the fundamental dynamics, allowing future research to pinpoint and pursue such additional questions.

Our work has highlighted three major classes of cross-national issues that globally distributed teams may encounter: differences in approaches to organizational control and authority relations, in interpersonal communication styles, and in work-related problem solving and cultivation of knowledge. Previous research has tended to focus heavily on differences in styles of interpersonal communication. Yet we show that cultural differences in authority relations and work knowledge and problem solving may, in fact, be harder to resolve. It could be that these differences were particularly large in the specific cross-cultural relationships we studied. Yet it also could be that authority relations and approaches to knowledge and problem solving are so central to the conduct of collaborative work that even small differences present surprises and require adaptation. This is a question for future research.

We observed differences in degree of adaptation across these three classes of cross-national issues. In all the cases, cultural differences were embodied in and sustained through local norms, institutions, practices, or conditions. We have proposed, however, that cultural differences in interpersonal communication styles were relatively easy to address because team members could often compartmentalize them, adapting their communication to the preferences of remote colleagues while continuing to address local colleagues according to custom. By contrast, it seemed to be more difficult for the work teams we studied to compartmentalize approaches to organizational control and authority relations and differences in work knowledge and problem-solving practices. Instead, they endeavored to work out common understandings and practices. They found these efforts to be constrained, however, by norms, institutions, practices, and conditions prevailing in each location. Differences in work knowledge and problem-solving approaches, for example, were embedded in local educational and economic systems and the industry base. These institutions are not quickly or easily changed, and we saw little adaptation during the span of our study. Differences in approaches to organizational control and authority relations were adapted over the course of multiyear dialectical processes, yet a final resolution remained unclear. Informed by the present work, future research might delve further into the question of whether and why some differences might be more amenable to adaptation than others. This could mean designing a study that compares adaptation for cultural differences that are more versus less embedded in and reinforced by other nested systems and more versus less amenable to compartmentalization.

In our embedded model of cultural adaptation in globally distributed teams, we envision three primary dynamics: within-team cross-location adaptation attempts; outward pressure on local institutions, norms, and practices; and incoming pressure from local institutions, norms, and practices (see Figure 6). Cross-national tensions and incompatibilities are most immediately felt in team interaction across sites. When teams adapt practices in response to these stresses, forces for change start to press outward. For example, when Indian developers embraced Western notions of professional authority, their managers felt pressure to give up the command and control they had worked so hard to win during their careers. Some local managers resisted these changes. Sometimes, however, changes gain traction in an organization or society. For example, Indian developers may start to select companies that have adapted their authority relations, forcing change in the industry. They also may apply these ideas in their relations with family and government. Our model depicts the institutions, norms, and practices of each location as being self-contained. In practice, however, some of these may span national boundaries, via international institutions, global professional norms, and global best practices. We see such institutions, norms, and practices as outcomes of the process examined in this paper: the working and reworking of incompatible meanings and practices across locations.

### A Dynamic Rendering of Nested Structuration

In addition to offering a new model of cultural adaptation in global teams, our work provides a new, more complex, more dynamic rendering of nested structuration. Perlow et al. (2004) offered a theory of fit among structures at different levels of analysis (the workgroup, organizational, and institutional levels) within a system. They propose that fit is achieved through human interaction over time that gradually brings structures at multiple levels into alignment. They give the example of workgroup-helping patterns, organizational reward systems, and institutional policies all being reinforced by the same patterns of interaction. They do not, however, explain exactly how structures come into alignment through interaction nor do they offer an explanation of how things change. In our view, contradictions arise all the time within and across nested structures: people have babies, gas prices go up or down, new technologies emerge, the climate changes, a new colloquialism is repeated, global teams are formed. Our work provides a grounded theoretical account of what typically happens next, especially across nested structures: divergence may be received with puzzlement, followed by talking and learning, and some sort of response. The response may constrain divergence, as when a boss enforces existing policies concerning face time at the office despite rising gas prices, or they may offer some sort of informal accommodation or workaround, which could pave the way for a formal change in policy. Our work suggests, however, that such formal changes, or antitheses, can be expected to surface new contradictions within and across nested system, which can produce more divergence. For example, decision-making patterns in the workgroup change because fewer people are working in the office. Our work offers a richer and more dynamic understanding of the key adaptation dynamics within and across nested systems. Our dynamic view of nested structuration suggests research attention to responses to change as one element in a nested system moves out of alignment or as a trend takes hold. It also invites attention to creative human agency in the face of contradictions, particularly across nested structures, which we see in talking and learning, workarounds, antitheses, and syntheses.

Our work advances understanding of dialectical processes by identifying transitional activities occurring within the grand sequences of thesis, antithesis, and synthesis. Under conditions of organizational interdependence, we provide insight into the struggle before a particular view, value, or force gains the upper hand. In our data, formal structural shifts were preceded by workarounds that enabled the transition and contained some of its stresses. Frequently, dialectical stresses devolved to individuals, team leaders in particular. We observed the restless shifting of stresses between different groups, between individual and structural embodiments, and between formal and informal solutions. We think this arises from human agency in the face of embeddedness in incompatible and incompletely understood nested structures. Gibbs (2009) observed dialectical tensions in a "global software team," but the structural characteristics of the situation she studied were quite different than those of the present study. She studied tensions within a large department that provided individual contract workers for software development projects around the world–a fragmented and transitory work environment. She studied dialectical discourse—the way people talked about tensions—rather than dialectical adaptation of workplace structures and practices. From the two studies, we can conclude that it is critical to consider the structural characteristics—internal and external—of a globally distributed work enterprise and that we can expect to find tensions within such systems. The form tensions take may be related to structural characteristics. This may explain some of the differences in the struggles Metiu (2006) observed in a vendor–client team relationship in contrast to those we saw in distributed teams within a global company.

The dynamics we explicate here probably are not limited to the extreme case of cross-national geographically distributed teams. Any time there is significant interdependence across different sets of nested institutions, norms, and practices, we should see these dynamics. We could extrapolate in a straightforward way to strategic alliances and the home-host country relations of multinational companies. We find in these literatures some theoretical work concerning dialectical dynamics (e.g., Seo and Creed 2002) and some empirical observations of dialectical dynamics (e.g., Almond et al. 2005, de Rond and Bouchikhi 2004) and of the creation of negotiated order (Brannen and Salk 2000). We did not find, however, a theoretical explication and empirical demonstration of the dynamics revealed here. Thus, our work may contribute to these literatures.

If we change the way we bracket phenomena, we may recognize dynamic nested structuration in still more settings. It could be that cross-functional team members experience dialectical tensions such as those we observed in globally distributed teams. Agreements that seemed sensible when reached in a joint meeting may not be feasible when team members leave the meeting and return to their home functions, finding themselves again embedded in local meaning systems, interests, and practices and constrained in their ability to adapt. As another example, a professional collaboration between individuals from different institutions may evidence divergence and dialectical invention in the face of conflicting standards, practices, and pressures of those institutions. Challenges would multiply at the international, cross-organizational level. In the development of the Boeing 787 airplane, for example, Boeing employees worked closely with partner organizations such as Alenia (Italy) and Vought (United States). Employees across

the organizations remained embedded, however, in their own organizational structures and experienced tensions in their joint work that stemmed from conflicting incentive systems, work processes, organizational cultures, and training. In summary, dynamic nested structuration can be expected when there is (1) significant interdependence; (2) significant embeddedness in multilayered sets of institutions, practices, norms, and conditions; and (3) significant differences in these principles, practices, and conditions.

### Limitations

There are several limitations to the study we report. First, we selected teams that were spread across just two locations. Although this probably helped us recognize the dialectic adaptation struggle, many global teams are spread across three or more locations. We speculate that, as the number of locations and countries grow, so do the complexity of the adaptation dynamics. At some point, the dialectic process may break down. With five or more locations, for example, mutual adjustment may not be viable and practices may more likely be imposed from above rather than generated through the informal and iterative process we observed. Second, our study was conducted over several years, which enabled us to observe the unfolding of the dialectic process. We were not in the field long enough, however, to observe the achievement of a steady state, particularly for matters related to organizational authority and control and work-related cultivation of knowledge and problem solving. It is therefore difficult to know when and if the process eventually resolves. The strength of different sets of interrelated institutions, norms, and practices could present a partnership with an unending process of learning and adjustment—or dissolution. The answer to this question might be determined by the adaptive range of the relevant institutions, practices, and conditions and the inventiveness, persistence, and capacity to hold stress of the agents who seek to facilitate adaptation. Finally, we started our study after the teams had begun to work together, and so we lack data concerning the earliest stages of team formation. Despite team longevities ranging from one to three years, however, we saw the same process of dialectical adaptation. This suggests that the dynamics we exposed are robust. Future research would benefit from following teams from their formation to better understand these dynamics.

### Implications for Practice

Our study offers five primary contributions to practice. First, static entity approaches to culture do not give a realistic picture of the means by which to address cultural differences in globally distributed teams. Organizations frequently approach cultural differences in global teams as a problem of a lack of cultural knowledge with an underlying assumption that people armed with a better understanding simply need to be more flexible. This view, however, fails to recognize that individuals often are embedded in nested structures that hold cultural behaviors in place—and punish those who violate them. Our research suggests that organizations cannot count on individual contributors to make all the necessary accommodations; managers must be vigilant in identifying and addressing system incompatibilities. Second, strong cross-national managerial partnerships may help leaders pool their understanding to find creative solutions and substitutions that work for each group. This is no small task, however, and so, third, the work of leading and managing global teams may lead to stress and burnout in individuals in such situations. In globally distributed teams, "standing in the gap" may not always be a temporary solution. It could be that some leaders are eternally stretched across the gap between relatively immobile but interdependent nested systems. This sobering point should not be brushed aside. It may be helpful to give team leaders leeway to craft temporary solutions and experiments, to encourage them to see themselves as learners and inventors who work in challenging environments, and to share best practices.

The learning and adaptation process that we describe does not happen overnight; it may take years. This suggests that, fourth, the level of commitment to such collaborations may need to be long term. Organizations should consider their ability to make long-term commitments prior to setting up collaborations between globally dispersed sites. Although we anticipate that the ability to work across sites will increase over time, incompatibilities between different nested structures inevitably will surface. Fifth, and finally, although all of our teams spanned just two locations, our theory suggests that adding more locations would create more complex processes yet with the same dialectical form. Team members from multiple locations are likely to make adaptive moves and encounter resistance in their local context, but as the number of local contexts that must be taken into account grows, so too will the frustration of team members. Organizations therefore may want to incorporate the cost of complexity into their strategic decisions regarding the number of sites involved in a given collaborative effort.

Our work provides a new picture of globally distributed teams, one that attends to both their internal dynamics and the relationship of teams and their members to other systems in which they are socially and physically embedded. Team members and managers encountered cultural differences in expectations, meanings, and norms that were stubbornly anchored in different local institutions, societies, and contexts. With an embedded view of cultural adaptation, we may become more aware of and effective in responding to the challenges team members face as they bridge worlds.

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