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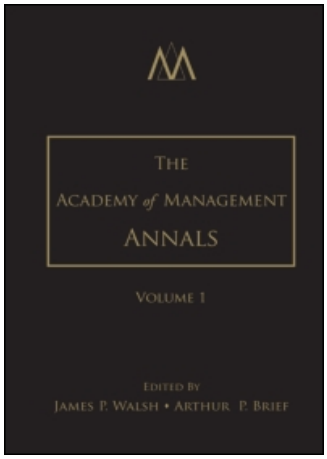

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Chapter 12: HRM and Distributed Work

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12
HRM and Distributed Work
Managing People Across Distances

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Abstract

The phenomenon of managing work that is distributed over geographical distance is not new but is increasing in both frequency and intentionality as a function of globalization and knowledge-centric strategies. I review the literature on geographically distributed work, both that which highlights liabilities of loss of proximity and more recent research that emphasizes "virtual teams" as an intentional organizing device. I explore the adaptations, remedies, and countervailing strategies deployed to support such teams, contrasting those that minimize distance with those that increase individual and group capacity for coping with distance. I also emphasize that other dimensions of distance — cultural, administrative, and economic — affect the organization of work, the experiences of those doing the work, and individual and organizational outcomes. Here I highlight the "blended workforce" in which standard (traditional employees) and nonstandard (temporary and contract) workers are organized to accomplish interdependent tasks — and again contrast problems of distance with emergent adaptations. Finally, I explore the implications for human resource management (HRM), first considering which HR systems are best suited to work distributed over different types of distance, and then reviewing literature on specific HR practices — selection, training, task/job design, compensation, and performance appraisal. I close by arguing that HRM research must reach beyond its past focus on managing employees within a single firm over a prolonged career under collocated conditions. As the world generates countless new distance-related phenomena, our research must tackle the challenges of managing both standard and non-standard

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workers engaged in interdependent tasks of limited duration across multiple employers/clients and involving multiple dimensions of distance.

Introduction

> It is now possible for more people than ever to collaborate and compete in real time with more other people on more different kinds of work from more different corners of the planet and on a more equal footing than at any previous time in the history of the world. (Thomas Friedman, *The World Is Flat*, 2005)

The new realities of work and its distribution over geographical distance confront us daily as we scan what is happening in the world. News of the latest investment by a multinational corporation (MNC) in a foreign R&D facility is followed by predictions of the high numbers of developed-economy workers whose jobs may be displaced by offshoring to low-labor-cost countries. This news can both surprise and disorient us when it challenges our sense of what work firms can plausibly distribute over geographic distance and our assumptions about why and when firms decide to keep particular activities collocated versus disaggregating them for distribution over time and space.

The phenomenon of geographically distributed work is not new but it has received increased attention in recent years. Three trends are particularly noteworthy:

1. Both large and small companies in developed countries have increased their outsourcing of tasks to suppliers and contractors in other countries, thus combining externalization of economic activity with geographic dispersion in the phenomenon known as "offshoring." Following an initial emphasis on offshoring manufacturing tasks, where the numerical impact has been greatest, the current accelerating trend is the offshoring of knowledge-based impersonal services (Dossani & Kenney, 2006; Farrell, Laboissiere, & Rosenfeld, 2006).
2. Multinational corporations have shifted employment within the firm's boundaries. In an internal analogue to "offshoring," they are decreasing employment at their "home base" facilities in high-cost developed countries while increasing employment at their sites in lower-cost developing countries. Furthermore, they are also increasing their employment in developed countries, outside their home country, through new investments designed to provide more market opportunities. Harrison and McMillan (2006) documented this trend for U.S. MNCs; however, this appears to be a general trend.
3. Even within a given country, firms of all kinds take advantage of lower costs and improved performance of information and communications technology (ICT) to distribute more work over distance,

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> both within the firm (e.g., assigning more tasks to "virtual teams"; allowing more employees to perform telework away from the central office; acquiring firms whose employees are located too far away to allow for geographic consolidation) and across firms (e.g., utilizing a wide array of organizational arrangements to carry out interdependent tasks involving both the firm's employees and employees of suppliers, customers, or alliance partners).

The combination of these trends—together with the "three billion new capitalists" (Prestowitz, 2005) entering the global labor market from countries such as China and India—has stimulated public imagination and caused considerable media attention. Solid research is only slowly emerging, and it often focuses on the impact of these trends on employment, wages, and standard of living in the developed countries.[1] Much less attention has been paid to the actual challenges of carrying out diverse interdependent work tasks over geographical distance. One goal of the current chapter is to summarize what we know about geographically distributed work and how it is different from (or similar to) collocated work.

The debate over the positive and negative features of geographically distributed work is both intellectually and emotionally compelling. I would argue, however, that we risk giving disproportionate attention to geographical distance while neglecting other issues of distance less perceptually salient, yet possibly having a larger impact on how work is accomplished in today's organizations. Calling attention to work distributed over different types of distance is a second goal of this chapter.

To address this goal, I will modify the CAGE framework that Ghemawat (2001) developed to analyze the challenges of cultural, administrative/political, geographical, and economic distance for the multinational/global firm. I will argue that by considering various kinds of distance and how they interact, we can understand more deeply the opportunities and liabilities of distributed work. In particular, I will argue that distance associated with employment status (the "E" in my modified framework) can be highly problematic whenever regular employees and nonstandard (temporary or contract) workers interact while accomplishing interdependent tasks—but that this type of distance has not received sufficient attention from managers or scholars (see, however, Ashford, George, & Blatt, chapter 2, this volume).

My third goal is to highlight the human resource (HR) challenges of managing people over distance. I will first consider what the strategic human resource management (SHRM) literature suggests about the HR systems best suited to different types of distributed work. I next examine the research on specific HR practices—for example, selection, training, task/job design, compensation, and performance appraisal—in relation to distributed work. Then I will shift the focus from HR practices of the firm to employment policies at higher levels of

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analysis—for example, industry, region, or country. Many employers still premise employment policies on the idea of employees that work for long continuous periods for a single employer at a common location under direct supervision by management. The proliferation of different types of distributed work makes many of these policies obsolete at best and harmful at worst.

Much research on distributed work emphasizes the many problems that can result from different types of distance. I will briefly summarize this research, but I will devote more attention to adaptations, remedies, and countervailing strategies, developed by individual, groups, and organizations, in response to those problems. One kind of adaptation seeks to *minimize distance*, either physically (e.g., bringing team members together for face-to-face meetings) or in the structuring of work (e.g., defining tasks to be modular with standardized interfaces that minimize coordination requirements). Another kind of adaptation seeks to *increase individual and group capacity for coping with distance.* This capacity is best increased, the literature suggests, by enhancing shared understanding of the work task/context and developing some level of shared or collective identity among those working together on the task. My fourth goal for this chapter is to highlight these two approaches in relation to various types of distance.

I organize the chapter into four sections. First, I will define *distributed* work, categorize different types of distance, and assess the incidence of these phenomena. Second, I will summarize what we know about distributed work, highlighting two phenomena: (a) virtual teams, consisting of members separated by geographical distance whose interactions are primarily ICT-mediated; and (b) the blended workforce, consisting of a mixture of regular employees and nonstandard temporary or contract workers. Third, I will draw out the implications of applying strategic HRM theories to managing people over distance, and then spotlight HR practices and employment policies relevant to the management of virtual teams and blended workforces. The fourth section will suggest the limitations of the research carried out so far on these topics, as well as a future research agenda.

Exploring the Phenomenon of Distributed Work

What Is Work Distributed Over Distance(s)?

To say that work is distributed immediately conjures up an image of geographic distance; however, distributed work potentially involves more than this one kind of distance. The Webster's definition of *distribute* includes the following: (a) to divide among several or many: apportion; (b) to spread out to cover something: scatter; (c) to separate, especially into kinds. *Distribute* conveys a broader meaning than divide; it is said to apply to any manner of separating into parts or spreading out, equally or systematically or merely at random, whereas divide connotes the initial separation of the whole before

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giving out the parts. Our images of division of labor, going back to Adam Smith, involve a preplanned, rational separation into parts for the purpose of efficiency. The realities of distributed work are more complex. It may take many forms, from systematic to more random; both separation into parts and spreading out may occur along more dimensions than geography; and motivations include achieving cost savings but also connecting to expertise, exploring new knowledge domains, and enabling personal networks.

A Google search on distributed work quickly turns up definitions that reflect this complexity. The author of one Weblog (http://futuretense.corante.com/archives/2005/09/14) stated

> We consider work to be distributed if *any of the following conditions* are met [emphasis added]: Individual workers are located in different physical locations; most normal communications and interactions, even with colleagues in the next office, are asynchronous. That is, they do not occur simultaneously, or the individual workers are not all working for the same organization, or are working within distinctively different parts of the same parent organization. They may have widely different terms of employment.

Ghemawat (2001) provided a useful framework for thinking about such multiple forms of distance in the context of globalization. He called it CAGE, referring to cultural, administrative/political, geographical, and economic distance, and developed the argument that the type of distance affects different businesses in different ways. I have modified this framework to suit my purposes, as shown in Table 12.1. As previously noted, the most significant modification is the replacement of "economic distance" with "employment status" distance.

I will use this typology to consider the challenges of managing distributed work across distance, defined along cultural, administrative, geographical, and employment status dimensions, following the premise that different types of distance will affect this management task in different ways.

Why Is Distributed Work Important?

We can link the realities of distributed work to a number of broader trends affecting today's organizations. One trend highlighted by Walsh, Meyer, and Schoonhoven (2006) is "transnational emergence," referring to the rapid growth and increased impact of transnational corporations.[2] As Walsh and colleagues (2006) reported, transnational organizations are big—and getting bigger (employment at U.S.-based transnationals grew by 34% between 1991 and 2001, with 42% of their employees living outside of the United States by 2001). They operate in a huge number of countries (an average of 93 countries for the top 10 firms in the 2005 *Fortune* 500), and much of this growth is accomplished via cross-border mergers and acquisitions (increasing from

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Table 12.1 Different Types of Distance

	Ghemawat (2001)	Definitions Used Here
C: Cultural	Affects how people interact, with common (linguistic) language as the most obvious factor; however, also social norms and assumptions about "how we do things" that are more subtle but still powerful	Same; however, considered at both national and organizational levels of analysis
A: Administrative/ Political	Historical and political associations, including (a) colony/colonizer relations and presence (or absence) of common currency, (b) trading bloc, (c) political union, and (d) other factors that can facilitate interaction	The relationship of focal organization to others; for example, is one organization a supplier, a contractor, or a customer of another? Did one organization acquire or merge with another? How many administrative boundaries must be crossed in doing distributed work? How many different organizational identities are salient to interacting individuals?
G: Geographic	Miles/kilometers separating those interacting; size of country; average within-country distance to borders; access to waterways; transportation and communications infrastructure	Physical location; size of location (number of employees); proximity or dispersion of other locations associated with focal organization; proximity or dispersion of locations of affiliated firms
E: Economic (modified here to cover Employment Status)	The extent to which a rich country is trading with another rich country or a poor country is trading with another poor country, vs. a rich country trading with a poor country; the influence of disparities on the frequency and intensity of interaction	The extent to which interactions involve individuals of the same or different employment status in relation to focal organization; for example, a full-time employee versus a part-time employee, or a temporary employee versus a full or part-time contract worker (potentially hired through a third party or broker)

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less than $100 billion in 1987 to $720 billion in 1999) and strategic alliances (increasing from roughly 2,500 in 1990 to 4,350 in 2000).

The need to coordinate the work of employees operating within the same transnational firm, but separated by geographical distance, is certainly one consequence of this trend. These firms increasingly organize virtual teams to work on specific projects, with members chosen for their distinctive expertise or knowledge. These firms also pursue competitive advantage by continually reconfiguring their value chains. They may partner with a supplier or customer on a collaborative project, outsource certain activities completely, or decide to strengthen a competence and bring activities back into the firm (called "insourcing"). The resulting fluidity and complexity of organizational and employment arrangements often generates multiple forms of distance. These forms of distance become layered, one upon another, and interact in ways that we largely do not understand.

A second trend highlighted by Walsh and colleagues (2006) is disaggregation—that is, the fragmentation of organizations, careers, and jobs. This is a by-product of firms pursuing the strategies previously described and seeking flexibility in order to cope with the volatility and uncertainty of being part of a global economy. Disaggregation also results from related changes in the nature of work (Arthur & Rousseau, 2001; Barley & Kunda, 2001; Bradley, Schipani, Sundaram, & Walsh, 1999; DiMaggio, 2001; Heckscher & Adler, 2006; Kalleberg, 2000; Kanter, 1990; Maccoby, 2006; Powell, 2001; Smith, 1997, 1998). These include

- The increased value placed on knowledge as a source of value creation (vs. simply owning physical assets of land, capital, or equipment)
- The increased value placed on employee adaptability, learning capabilities, and interpersonal skills (vs. specific specialized expertise)
- The increased reliance on projects as the basic unit for organizing work, with an individual's work life organized around a stream of projects (vs. job ladders and fixed periods between promotions as the building blocks of an individual's work life)
- The increased emphasis on peer-based, informal social controls and horizontal/lateral coordination mechanisms (vs. hierarchical forms of organizational control and vertical coordination mechanisms embedded in formal organizational structure)
- The increased prevalence of market-based influences on individual employment contracts and career paths that span organizations (vs. internal labor markets that shield employees from market forces, coupled with employment security)

In addition, the pursuit of strategic flexibility and lower costs in the face of global competition means that firms are essentially engaged in a continuous process of restructuring. This restructuring can lead to hiring as well as layoffs;

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it is not confined to periods of economic distress, but results from ongoing deliberations about which activities/businesses to maintain and which to outsource or eliminate. This constant state of flux accelerates the disaggregation process, as firms are less willing to hire permanent employees (who expect long-term careers and steady growth in both salary and employee benefits). Firms are also more willing to engage contingent workers (whose attachment to the firm is time-limited, whose pay is often hourly and negotiated by a third-party broker, and whose skills are often technically specialized, yet not firm specific). Employees end up with a much higher sense of job insecurity and often have less trust in management and less commitment to the firm (Cappelli, 1999; Morris, Cascio, & Young, 1999).

Under these conditions, many firms end up with "blended" workforces of employees and contractors that can be challenging to manage. These differences in employment status can create distance, even among individuals working side by side, whose consequences can be more destructive to effective coordination and collaboration than many miles of physical separation.[3] Where standard and nonstandard workers have shared responsibility for interdependent tasks and the consequences of poor performance are significant—for example, in contexts that present high risks and require high reliability—these negative consequences of employment status distance can actually be dangerous for workers (Kochan, Smith, Wells, & Rebitzer, 1994), customers, and citizens/communities (Rousseau & Libuser, 1997). Few problems facing virtual teams are as potentially serious, yet the challenges of managing such teams draw far more attention than those associated with the blended workforce.

How Extensive Is Distributed Work?

The term distributed work covers a very wide range of organizational and individual activity, including intraorganizational virtual teams, offshoring, nonstandard work arrangements, teleworking (telecommuting), and any combination of these categories. For example, interorganizational virtual teams involving employees from a focal firm and employees from its suppliers; or a contract worker who is located offshore; or telecommuting arrangements that allow a contract worker to work from home.

Estimates of activity in any of these categories are likely to be based on imprecise, varied definitions and limited in scope—that is, based on a single country, a limited number of industries, or a limited sample of (usually large) companies. With those caveats, here are some admittedly scattershot statistics:

Intraorganizational Virtual Teams

- The *Wall Street Journal* reports that more than half of U.S. companies with more than 5,000 employees use virtual teams (de Lisser, 1999).

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- A Gartner Group survey found that more than 60% of professional employees surveyed reported working in a virtual team (Jones, 2004; Yoo, Kanawattanachai, & Citurs, 2002).
- McDonough, Kahn, and Griffin (1999) surveyed a sample of Fortune 500 companies to inquire about their use of global new product development teams (GNPDT). The sample included 22 projects from 13 business units at 10 corporations: 8 headquartered in the United States, 1 headquartered in Japan, and 1 headquartered in France. All SBUs were using GNPDTs. Out of 13 SBUs, 6 reported using GNPDTs extensively, with at least 10 teams in operation. The rest of the SBUs were using fewer than five GNPDTs. The average project consisted of 15 core team members from four functions residing in four countries. Team members from 3 projects were collocated for more than 50% of the time. Team members from the remaining 19 projects spent on average 7.5% of their time collocated.

Offshoring

- The McKinsey Global Institute study of offshoring, based on assessing eight industries, estimates that 11% of service jobs around the world could be carried out remotely, considering those tasks that require "neither substantial local knowledge nor physical or complex interaction between an employee and customers or colleagues" (Farrell et al., 2006, p. 24). Extrapolated to all nonagricultural employment, this is equivalent to 160 million jobs. (Farrell et al., 2006).
- Alan Blinder (2006) considered the portion of current U.S. employment that could be classified as "impersonal services" and estimated that, "while large swaths of the U.S. labor market look to be immune," the number of current U.S. service sector jobs that could be susceptible to offshoring is two to three times the total number of current manufacturing jobs, or 30–40 million (p. 120).
- In 2004, the Ministry of Economic Affairs in Taiwan reported on the percentage of personal-computer and laptop production outsourced to a handful of Taiwanese contract manufacturers operating in Taiwan and China. The list ranges from 100% for Apple, HP, NEC, and Acer, to 92% for Dell, to 50–70% for Fujitsu, Sony, and Toshiba. IBM's PC business is now entirely owned by the Chinese company Lenovo (Yang & Hsia, 2004).

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Nonstandard Work Arrangements

- U.S. employment in the temporary-help industry grew by 58% between 1992 and 1996 (Kunda, Barley, & Evans, 2002), and accounted for 10% of net job creation between 1990 and 2000 (Autor, 2001).
- According to the 1995 and 1997 Current Population Surveys, roughly 18% of the U.S. labor force work under nonstandard arrangements, either as independent contractors (~7%), self-employed workers (~5%), temporary agency employees (~3%), or on-call workers (3%) (Polivka, Cohany, & Hipple, 2000; p. 44).

Teleworking

- According to the 2004 Gartner Group report, "Teleworking: The Quiet Revolution," by 2008, 41 million corporate employees globally may spend at least one day a week teleworking, and 100 million will work from home at least one day a month. The highest proportion of these will be U.S. workers.
- A 2004 report from the U.S. Census identified a rapid increase in work from home, based on data from 2000. In the year 2000, 4.2 million (19%) of Americans did some or all of their work at home (the percentage that are employees is not identified). This is an increase of 800,000 (23%) from 1990 to 2000, twice the growth rate of the overall workforce.

I will not treat all of these types of distributed work in detail; in particular, I will say little specifically on the topic of individual teleworking (see Bailey & Kurland, 2002, for a recent review). My focus on multiple types of distance does encompass all the other categories and their potential combinations. I will seek to find common ways to think about dealing with these different types of distance and suggest what this means for research on distributed work.

What We Know About Distributed Work

I will start this section by summarizing social psychological research on the benefits of proximity for work groups and how those benefits are disrupted by geographical distance. I will next highlight research on virtual teams, first summarizing the many problems they potentially face, and then devoting considerable attention to the *adaptations, remedies, and countervailing strategies* (hereafter, ARCS) that individuals and groups have developed to cope with these problems. Finally, I turn to research on the "blended workforce" to more closely examine employment status distance. Again, I will start with a review of problems from combining regular (standard) and contingent (nonstandard) workers, and then report on the ARCS for this type of distance.

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Benefits of Proximity

In their review of social psychological literature, Sara Kiesler and Jonathon Cummings (2002) amassed extensive evidence that closer proximity in work groups is highly beneficial vis-à-vis a variety of individual and group outcomes.[4] The relationship is marked by three threshold effects. First, individuals are uncomfortable when physical proximity is too close because this violates a sense of personal space (Freedman, 1975). Second, the consequences of proximity known as "social facilitation"—triggered by a person's awareness of others, concern with what others think, and sense of involvement with a group—are heavily dependent on the ongoing physical presence of others (Forsyth, 1998). Third, frequency of communication and informal interaction are both highly dependent on proximity. When distance increases to the point that the costs of getting together rise, both communication and interaction drop dramatically (Allen, 1977; Kraut & Streeter, 1995); a distance of 30–50 meters of physical separation appears to be the boundary condition.

Table 12.2 is an abridged summary of the effects of proximity from Kiesler and Cummings (2002). While the mere presence of others can increase distraction and stress in the performance of difficult tasks (as people prefer privacy for these), most social facilitation effects of observing and gaining familiarity with others in your immediate presence are positive. Performance on many tasks improves, imitation and conformity behaviors increase, liking of others grows, and an incipient group identity emerges, leading to commitment and greater contributions to the group.

The effects of face-to-face communication are even more positive. Felt commitment, interpersonal attraction, information exchange, feedback, and persuasion all increase, leading to greater cooperation, participation, and mutual adjustment on interdependent tasks, as well as a stronger group identity, a decrease in conflict and misunderstanding, and greater contribution by and consensus among individual group members. When this communication recurrently takes place in a shared social setting, shared norms and expectations increase, as does work satisfaction, and role behaviors become increasingly well-matched to task and situational requirements. Finally, individuals who repeatedly experience a shared space will, over time, mark it (and defend it) as group territory; group identity and cohesion both strengthen quickly under such conditions.

Proximity within the 30–50 meter threshold leads to spontaneous communication, which is valuable because of its links to group creativity and innovation. When individuals can bump into each other in the hallways, at the cafeteria, in the coffee room, or around the mailboxes, information exchange and feedback increase, as does interpersonal attraction. At the group level, interdependent tasks are more often created, group meetings and decisions are more frequent, and shared understanding increases. Group identity is

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Table 12.2 Concepts and Research Findings Related to Proximity

Concept	Psychological Effects	Behavioral and Group Effects	Effects on Work	Related Factors
Mere presence of others	Evaluation of apprehension ↑ Sense of privacy ↓	Stress ↑ Distraction ↑ Effort ↑	Performance of automated tasks ↑ Performance of difficult tasks ↓	Work complexity
	Observation of and attention to those present ↑ Social pressure ↑	Involvement ↑ Imitation ↑ Social influence ↑ Conformity ↑	Urgency of proximate task, time spent on proximate group's work ↑	Competing tasks and deadlines
	Familiarity ↑ (mere exposure effect)	Liking, positive responding ↑ Group identity ↑	Contributions to group ↑	Time spent in presence of others
Face-to-face communication	Felt social contract (commitment) ↑	Cooperation ↑ Conflict ↓	Agreements ↑ Contributions to group ↑	
	Interpersonal attraction ↑	Group identity ↑	Agreements ↑ Contributions to group ↑	
	Information exchange, mutual observation, and backchannel and direct feedback ↑	Task adjustments, decisions ↑	Coordination ↑ Learning and overlapping expertise↑	Type of task
	Perceived participation ↑ Social pressure ↑ Persuasion ↑	Participation ↑ Group identity ↑	Conformity ↑ Consensus ↑ Work satisfaction ↑	Decision rules (e.g., majority)

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Shared social setting	Shared expectations and norms ↑	Roles and behaviors matched to situation ↑	Enactment of expected work behavior and roles ↑	Cues that demark situations and territories
	Territoriality ↑ Group identity ↑	Demarcation and protection of territory ↑ Interaction ↑	Control of work and access within the territory ↑ Work satisfaction ↑	
Spontaneous communication	Information exchange, mutual observation, and backchannel and direct feedback ↑	Group meetings and decisions ↑ Creation of interdependent tasks ↑ Mutual understanding ↑	Task adjustments ↑ Know-how and overlapping expertise ↑ Social support ↑	Work interdependence
	Interpersonal attraction ↑	Group identity ↑ Close ties ↑ Intentional contact ↑	Likelihood of collaboration ↑	

Source: Kiesler & Cummings, 2002, pp. 60–61.
Note: Adjacent cells along the same row represent relationships shown in the research literature.
Arrows up = more of this quality increases the proximity effect
Arrows down = more of this quality reduces the proximity effect

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reinforced, more overlapping know-how and expertise is generated, social support is provided more often, and the overall likelihood of intentional contact and collaborative behavior increases.

This early research on proximity found that distance caused the loss of these benefits. Kiesler and Cummings (2002) summarized what happens to distributed workers at geographical distances greater than 30–50 meters[5]:

> Distributed workers will have more difficulty forming close collaborations, dealing flexibly with one another, and expanding the breadth of relationships through unplanned mutual experiences. Strong ties will be more difficult to forge and to sustain in the distributed than in the collocated work group. When ties are weak (Hansen, 1999), transfer of complex knowledge from one location to another becomes more difficult. (p. 67)

Loss of Proximity—Cues Filtered Out

Research following this emphasis on the benefits of proximity has tended to emphasize what is lost when ICT-mediated interaction replaces face-to-face interaction. ICT-mediated communication eliminates nonlinguistic cues that amplify understanding of speech, constrains conversational strategies that put people at ease (e.g., small talk) or draw out their ideas (e.g., Socratic questioning), and restricts spontaneous social activities. Axtell, Fleck, and Turner (2004) identified this (following Culnan & Markus, 1987) as the "cues filtered out" perspective and linked it to theorizing about media richness (e.g., Daft & Lengel, 1986). Here, the emphasis is on the characteristics of different communications media, with face-to-face communication having the greatest richness due to the availability of visual and verbal cues that signal understanding and convey nuance, telephone having intermediate richness due to the presence of verbal cues, and e-mail, lacking both cues, having the least richness.[6]

Sproull and Kiesler's (1986) Lack of Social Context hypothesis suggested that the consequence of minimal social cues is deindividuation, so that individuals pay less attention to themselves and to others, are therefore less socially inhibited (hence, more likely to engage in antisocial behavior) and are less likely to establish close, interpersonal relationships. As noted next, support for this hypothesis has been mixed, yet this image of depersonalized communication remains prominent in our views about work distributed over geographic distance.

Much of this research was based on ad hoc teams of student volunteers under experimental lab conditions, whose members had no expectation of an ongoing relationship. As such, it did not consider the context in which real-world distributed work occurs. Kiesler and Cummings (2002) acknowledged the ramifications: "Distributed work does not drop from the sky on hapless

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groups. Surely it matters whether the antecedents of collocation or great distance include chance, management decision, personal choice, technology investment, the architecture of the task, or side effects of some other problem such as resource dependence" (p. 73).

This shortcoming began to receive attention beginning in the late 1990s with the wave of research on virtual teams.

Virtual Teams: Defined

The term *virtual teams* became common in management literature beginning in the late 1990s. This literature emphasizes geographically distributed teams explicitly created to leverage unique combinations of knowledge across various organizational and cultural boundaries, and hence, coming into existence with the reality of operating over distance as a founding condition.

Gibson and Cohen (2003) defined virtual teams as follows:

1. They are real teams, using classic definitional criteria (e.g., Hackman, Wageman, Ruddy, & Ray, 2000)—namely, a collection of individuals who are interdependent in their tasks, share responsibility for outcomes, see themselves (and viewed by others) as an intact social unit embedded in one or more social systems, and collectively manage their relationships across boundaries.
2. They work while separated by geographic distance.
3. Work is done virtually, via ICT-mediation, rather than face-to-face (p. 8).

Virtuality, from this perspective, is a continuum that has two dimensions: (a) extent of geographical dispersion and (b) extent of dependence on ICT (see also Griffith & Neale, 2001; Axtell et al., 2004). Virtual team members may all come from the same function or organization—or all belong to different organizations. Heterogeneity in the characteristics of individual members adds complexity to the task of managing the virtual team, but these differences do not define virtual teams because they also exist in collocated teams. Virtual teams deal with many of the same issues as collocated teams do, with virtuality amplifying both the benefits and the difficulties experienced by face-to-face teams.

The research reviewed here emphasizes the importance of studying virtual teams (a) over time, (b) that have relatively stable memberships, and (c) with significant tasks that provide the basis for selecting members.[7] Such teams still face the difficulties created by geographical/physical distance. Indeed, much virtual-teams research has emphasized the "cues filtered out" issues identified in past proximity-focused studies and the problems related to cohesion, conflict, trust, causal attributions, mutual contextual knowledge, and accessing dispersed knowledge. I will briefly address each of these problems here.

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More thorough treatments can be found in Axtell and colleagues (2004), and Griffith and Neale (2001).

Virtual Teams: Problems

Cohesion. From a proximity perspective, the premise here is that since geographically distributed team members interact less often and use less rich forms of communication than face-to-face team members, interpersonal attraction and friendship are less likely to occur, stereotyping of remote others is more likely, and members are less likely to identify with the team (e.g., McGrath and Hollingshead, 1994). Viewed from the perspective of social categorization, cohesion is linked to shared identity—that is, the extent of team-member attraction to the idea of the group and, hence, the extent to which they are likely to identify themselves with the group (Hogg, 1992). Just because individuals are assigned to be members of a work team does not automatically mean that they will perceive all team members as "in-group" (Hinds & Mortensen, 2002). When individuals have out-group feelings toward teammates, the consequences can be (a) decreased satisfaction with the team, (b) increased turnover, (c) lowered levels of cohesiveness, (d) reduced cooperation, and (e) higher levels of conflict (Williams & O'Reilly, 1998).

Trust. From the perspective of the benefits of proximity, virtual teams should have difficulty in establishing trust; Handy's phrase (1995) captures the hypothesis concisely: "trust needs touch." Clearly, trust in any group is emergent and evolutionary. McKnight, Cummings, and Chervany (1998) suggested that trust can often be strong at the beginning of any team's work, even when there are no preexisting relationships, as a function of individuals' general inclination to trust and assurances provided by the institutional context. Since this trust is based on assumptions and attributions rather than experience, it can unravel quickly in the presence of any negative information about the trustworthiness of the partner. Thus, if virtual teams are more likely to experience conflict and mistaken attributions, as the research reviewed in the following section would suggest, they would be more vulnerable to damaging this fragile trust.

Empirical research on trust at different points in a team's life cycle has produced mixed results. Zheng, Bos, Olson, & Olson (2001) found that trust was attainable by virtual teams with no face-to-face interaction among members in the context of an electronic prisoners' dilemma game. The "high-trust," globally dispersed student teams in Jarvenpaa and Leidner (1999) achieved that condition using only electronic communication. Furthermore, the high-trust teams in Jarvenpaa and Leidner's study had better group processes and performance outcomes than "low-trust" teams. Some of their high-trust teams started from a condition of low trust, but the reverse was also true, with teams that reported initially high trust seeing deterioration over time.

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Child (2001) pointed out that the calculative initial stage of trust is often based on either traditional bases of relationship, such as kinship or ethnicity ties, or on institutional assurances, provided by law or custom. A multinational team of diverse members may find little basis for establishing this initial trust and will thus be more dependent on building trust through their task-oriented activities. In line with Meyerson, Weick, and Kramer's (1996) notion of "swift trust," such teams will do best when members' roles are defined around technical specialties—reputations that they are motivated to uphold—and only moderate levels of task interdependence (Mannix, Griffith, & Neale, 2002). Jarvenpaa and Leidner (1999) found that in their student virtual teams, initial trust depended heavily on how much personal information team members shared at the start of their project, while the continuity of trust throughout the project depended more on the level of task-related communications.

Conflict. Many theories predict that conflict will be higher for virtual teams than it will be for collocated teams. Lack of proximity should bring less closeness and affinity (Kiesler & Cummings, 2002). Diversity of membership, along multiple dimensions, should weaken collective identity (Griffith & Neale, 2001). Mutual contextual awareness will be reduced (Cramton, 2001). Communication through a less rich media may filter out social cues and make it feel more impersonal (Sproull and Kiesler, 1986).

Hinds and Bailey (2003) developed a comprehensive model of conflict in virtual teams and have predicted that distance and ICT-mediated communication will each generate antecedents of all three types of conflict—(a) task, (b) affective/interpersonal, and (c) process—identified by Jehn (1997; Jehn, Northcraft, & Neale, 1999). While early studies found a potentially positive (actually an inverse U-shaped) relationship between task conflict and performance (e.g., Pelled, Eisenhardt, & Xin, 1999), others argued that individuals cannot necessarily distinguish among types of conflict (Williams & O'Reilly, 1998). Furthermore, recent meta-analyses suggest that teams engaged in complex tasks perform more poorly in the presence of any types of conflict, separately or combined (DeDreu & Weingart, 2003).

Only a few studies have actually compared distributed and collocated teams. In the first of a series of studies, Mortensen and Hinds (2001) found no differences in interpersonal or task conflict when comparing 12 dispersed teams and 12 collocated teams. They observed that teams became more harmonious over time as they developed familiarity and shared processes. Yet, in a different setting, Hinds and Mortensen (2005) noted that distributed teams reported more task and interpersonal conflict than collocated teams within the same multinational corporation. Here, they found that these differences were reduced or eliminated when moderated by shared understanding and shared context. Clearly, it is important to understand not only potential

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antecedents to conflict, but also conflict management strategies that any given virtual team may utilize.

Causal attribution. Cramton (2002) thoroughly examined the premise that the fundamental attribution error is likely to be exacerbated for distributed work. According to her summary, "working across dispersed locations typically reduces the situational information that collaborators have about each other, affects how they process information, and fosters the development of in-groups and out-groups based on locations. These processes bias perceptions of causes of behavior toward dispositional explanations rather than situational explanations" (p. 191). Among the potentially negative consequences are blunting of the capacity to learn; failure to meet expectations of others; and damage to interpersonal trust. The mechanism is consistent with past attribution research—that because actors have more information about their situation than others do, they attribute their own behavior to the situation, but when they do not have equivalent information for others, they tend to attribute cause for behavior to the disposition of the individual. So the relative lack of contextual information about remote others in distributed work (common, as described next) can lead to conflict-inciting attributions.

Mutual knowledge of context and accessing dispersed knowledge. Cramton (2001) focused on the "mutual knowledge" problem. For a group to access its collective knowledge, each member must have a good sense of not only the collective information known to all, but also what other members uniquely know. Cramton found that dispersed collaborators lack mutual knowledge of important aspects of each other's context; they do not guess/figure out what they need to explain about their own context; they find it difficult to develop a picture of their collaborator's context in their minds; they tend to forget what is communicated to them about this context; thus causing conflict. The negative consequences of these conflicts can be severe. What is salient in one context may have little meaning in another context; a team member may miss what is most crucial in a message; thus, it can be hard to know if everyone is operating from the same information. Furthermore, lack of contextual information can create a tendency toward dispositional rather than situational attributions.

Collocated groups often give more attention to commonly held information and ignore the unique knowledge of its individual members (Stasser & Titus, 1985). Distributed work may exacerbate this problem, because virtual team members may have less opportunity or capability to learn "who knows what" and may not even realize what unique information they hold.

The system by which a group organizes its knowledge about who knows what is called its "transactive memory" (Hollingshead, 1998; Wegner, 1987). For the previously stated reasons, a virtual team is likely to have a more difficult time developing its transactive memory than a collocated team

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(Hollingshead, Fulk, & Monge, 2002; Liang, Moreland, & Argote, 1995). Since familiarity from frequent interaction helps individuals cognitively organize their own knowledge of who knows what, the lessened interaction among virtual team members could block this process.

Virtual Teams: Adaptations, Remedies, and Countervailing Strategies

This list of potential problems with distributed work in virtual teams is long and daunting.[8] The mechanisms that affect virtual teams, however, are often no different from those that affect any collocated work group. Indeed, in some cases, features of the virtual work or the distributed work may prompt stronger, earlier, more appropriate action to prevent or circumvent these problems.

In this section, I will focus on the adaptations, remedies, and countervailing strategies (ARCS) created by individuals, work groups, and managers to cope with the problems of distributed work. These include (a) learning to recognize and react to the "cues left in" computer-mediated communication, (b) reducing coordination requirements and task interdependence through modularization and work restructuring, and (c) increasing shared understanding and shared identity.

Cues left in. The "cues left in" perspective takes issue with the implicit technological determinism in the media richness and "lack of social context" literature by showing how virtual team members adapt and respond to a different set of social cues when face-to-face cues are not available. From this perspective, technology does not completely eliminate social cues, but rather, causes them to take a different form (such as with e-mail messages). Over time, individuals learn to pick up cues from the content and language of the message, its timing, and even its typography and style (Walther & D'Addario, 2001; Walther & Tidwell, 1995).

In line with Walther's (1992) Social Information Processing theory, virtual team members seem to take longer to socialize and establish process norms and other ground rules, but eventually, these stages of group formation do happen. Given an expectation of future interaction, communications tend to remain personal and friendly, in contrast with earlier findings of impersonal, ICT-mediated communication among ad hoc, short-term groups. Essentially, media richness is not seen as an attribute of a given technology or communications mode, but rather, as a perception that can be enhanced over time through experience with the technology/communications mode, but also with the topic, the context, and the communication partners (Carlson & Zmud, 1999).

Another kind of adaptation occurs in the absence of cues providing individuating information about group members. Spears and Lea (1992, 1994) suggested that in visually anonymous distributed groups, attention is shifted away from individual differences toward those cues that help establish a

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common group identity; indeed, group members may grab onto the shared identity quickly and strongly (Postmes, Spears, & Lea, 1998). Similarly, Bhappu, Griffith, and Northcraft (1997) found that in the absence of visual cues, ascriptive differences such as gender were less salient to virtual team members.

Walther (1996, 1997) proposed a "hyper-personal" perspective: Given the limited information about an individual revealed through ICT-mediated communications, whatever is revealed becomes intensified as a basis for forming impressions. Group-identity cues may be more salient than individual-identity cues related to ascriptive characteristics such as gender, race, or age. The individual information that is available may be exaggerated, either positively or negatively.

Status differences, more than ascriptive characteristics, appear to be a "cue left in," according to several studies. Owens, Neale, and Sutton (2000) examined interactions among low-, medium-, and high-status group members of project teams in an R&D organization and found that teams tend to reproduce organizationally defined categories, hierarchies, and status differentials when working virtually.

Metiu (2006) highlighted the difficulties when distributed work involves cooperation among remote groups differing in status, a common phenomenon at a time of frequent outsourcing to lower labor cost countries. She found that status is both an input and an output of intergroup relations, and that cooperation often breaks down as status differentials are enacted. The U.S.-based, high-status software development group often refused to engage with the lower status group in India; this closure deepened perceived status differentials. The status dynamic was reinforced by the implicit competition between the two locations in the software industry. Clearly, status is highly relevant for situations in which geographical distance coincides with other types of distance.

Modularization and work structuring. Both modularization and work restructuring reduce task interdependence among individual team members as a coordination-minimizing approach to dealing with the challenges of distributed work. These strategies facilitate effective performance for geographically distributed teams by standardizing task boundaries and interface requirements, making extensive interaction unnecessary when completing assigned tasks.

Modularity is at once an attribute of product architecture and an organizational principle. When module boundaries, interface requirements, and hand-off processes are preestablished, individuals can work in relative autonomy with knowledge that their output will synchronize, by design, in the end. Software development and physical product development methodologies are now well-elaborated to pursue modularization as a solution for minimizing coordination complexity (Fixson, 2005; MacDuffie & Helper, 2006; Schilling, 2000; Sosa, Eppinger, Pich, McKendrick, & Stout, 2002; Ulrich, 1995).

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The limits of modularization are confronted whenever either external customer requirements or internal changes in technical content or organizational resources force a redrawing of module boundaries. Such boundary changes often involve intensive discussion and negotiation, and they increase task interdependence and communication requirements dramatically until new specifications are defined.

Similar to modularization, work restructuring aims to reduce interdependence through task decomposition. Eppinger (2001) argued that for complex, tightly coupled tasks such as product development, task sequences should be restructured to reduce interdependencies and minimize necessary information exchange. Even when a product design and the associated organizational structure cannot be modularized, careful attention to how tasks are allocated to different subgroups operating over distance can reduce the amount of information each group needs about the work of the other.

Work structuring has distinct limitations where geographical distance is involved. Lack of knowledge of what others are doing (in terms of mutual knowledge of context and the who knows what of transactive memory) can lead to confusion and lack of shared understanding of goals, as well as insufficient development of expertise or matching of expertise to task. Formalization tends to rely upon bureaucratic procedures, often adding costs and layers that impede speed. The reduction in interpersonal interaction that accompanies task segmentation can also increase the risk of different *thought worlds*, Dougherty's (1992) term for the different cognitive frames that arise naturally in functionally differentiated settings. Perspectives on the shared tasks and habits of work can harden in this segmented state.

Shared understanding and shared identity. Increasing shared understanding and shared identity is a capacity-enhancing approach to dealing with distance that can lessen the likelihood (or magnitude) of problems in virtual teams. *Shared understanding* is defined as the degree of cognitive overlap and commonality in beliefs, expectations, and perceptions about goals, tasks, processes, and members' knowledge, skills, and abilities; it is primarily concerned with task-related information and knowledge. *Shared identity* is defined as the degree of commonality in perceiving oneself as a member of an established and esteemed in-group with a particular identity, set of values, norms, and routines; it is primarily concerned with social categorization processes. These two conditions rarely occur independently. This dual emphasis is consistent with the perspective that group effectiveness is affected by both task characteristics and by the dynamics of interpersonal relations (Jehn et al., 1999; McGrath, 1984; Williams & O'Reilly, 1998).

Shared understanding is perhaps the most frequently identified factor necessary for the achievement of distributed work involving interdependent tasks (Hinds & Mortensen, 2005; Hinds & Weisband, 2003). This *cognitive* factor has

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both informational and interpretative content. With respect to information, group members doing work over distance need to have (or acquire) congruent information in relation to the common task—not identical, but substantially overlapping and cognitively consistent across the group. With respect to interpretation, group members must possess a common language, a common grounding in the issues, problems, challenges facing the organization and team, and a shared frame of reference. Shared understanding should help individuals engaged in separate but interdependent tasks to coordinate their actions more effectively (Kogut & Zander, 1992). In product development settings, for example, design engineers can coordinate their separate tasks if they share some knowledge about the technical subsystem within which each task is embedded (Postrel, 2002).

Hinds and Weisband (2003) emphasized several ways in which shared understanding contributes to the work of virtual teams:

1. It makes the behavior of others predictable, so that one can make assumptions about what is being done and what needs to be done without having to extensively monitor others (Mathieu, Goodwin, Heffner, Salas, & Cannon-Bowers, 2000).
2. It facilities the efficient use of resources and effort, both by avoiding risk-averse precautions in which individuals hedge their bets as they wait to observe the actions of others, and by knowing what expertise resides in which of the other team members—that is, transactive memory (Liang et al., 1995).
3. It reduces implementation problems and errors by helping a group resolve inevitable misunderstandings more quickly and with less interpersonal damage.
4. It increases satisfaction and motivation (and reduces frustration and conflict) of team members. In particular, shared understanding of goals and task requirements focuses attention on the specific goal-focused behaviors that will lead to positive outcomes and associated rewards.

As just noted, work distributed over distance can make shared understanding more complicated due to lack of mutual knowledge of context (Cramton, 2002) and difficulty accessing dispersed knowledge (Axtell et al., 2004). Sole and Edmondson (2002) found that with geographic distance, team members are not only less likely to know the expertise of members at a distant location, but they are also likely to view going to those members for task-appropriate knowledge as onerous. Given distance, members may make assumptions about others' knowledge based on social categorization, such as occupation, status, organizational membership, or location (Krauss & Fussell, 1990; Krauss, Fussell, Brennan, & Siegel, 2002). Even if shared understanding is constrained, groups may still tend to rely too heavily on the knowledge that they *know* is

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shared and underexploit the unique knowledge present in individual group members.

On the other hand, a virtual team selected explicitly to bring together individuals with unique and relevant knowledge may already be proactively focused on making all members aware of who knows what, as well as how to access remote knowledge. Experimental evidence suggests that explicitly identifying and locating the expertise of each team member greatly reduces information-sharing problems (Stasser, Vaughan, & Stewart, 2000).

Shared identity emerges from processes of social comparison (Sokol, 1992) and self-categorization (Turner, Hogg, Oakes, Reicher, & Whetherell, 1987)—that is, categorizing the self in relation to proximate others—in which individuals regularly engage. In-group versus out-group categorizations emerge, resulting in a more positive view of in-group members. As noted earlier, there is ample basis to predict a weakening of shared identity when group members are geographically remote from each other (Wiesenfeld, Raghuram, & Garud, 1999). From the "cues left in" perspective, however, the absence of individuating information may reduce friendship, but intensify identification with the group.

This raises the issue of how salient membership in a particular virtual team is for an individual. In a work context, individuals may belong to multiple teams, some collocated and some virtual. The physical presence of collocated team members will make identification with that group more salient and may interfere with identification with a virtual team. Indeed, dispersed group members often identify more strongly with their location or site than they do with their organizational function (Mortensen & Hinds, 2002). On the other hand, when virtual teams are formed to draw together specialized, complementary expertise for a particular task of great significance, membership is likely to have high salience for individuals and become the basis for a strong group identity.

Shared identity contributes to positive outcomes in a distributed group in the following ways. When a shared group identity is salient, team members are inclined to be more loyal, more trusting, and more concerned about promoting the welfare of the group (Brewer & Miller, 1996). In the presence of a shared team identity, distant team members may have more faith in other members and be more likely to talk through issues that arise (Hinds and Bailey, 2003). Shared identity will minimize in-group/out-group distinctions and will limit the stereotyping and attributions that tend to accompany them. Shared identity may mitigate—although it may not eliminate—the negative impact of status differences on interpersonal dynamics within a distributed team.

Shared understanding and shared identity interact in a variety of ways. Cramton (2001) found that in the absence of shared understanding, and with little knowledge of what distant colleagues do and do not know, members of dispersed teams at one location tend to rely on out-group categorizations to interpret the actions of remote-located teammates, and then make attributions

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about problems accordingly. The "cues left in" perspective predicts that the absence of individuating cues in virtual teams could intensify identification with the group (Spears & Lea, 1992). This could boost shared identity, but increase the common knowledge bias, which could cause the group to suboptimize the scope of shared understanding by not drawing out the unique knowledge of each member.

Hinds and Mortensen (2005) have performed one of the few empirical tests of these interrelated effects of these two factors; their design is also rare in that it compares virtual and collocated teams doing similar tasks in a common organizational context. They conceptualized both shared understanding and shared identity as moderators of conflict in distributed teams. They found that shared identity moderated the effects of distributed work on *interpersonal* conflict, while shared understanding moderated the effects of distributed work on *task* conflict. A measure of "spontaneous communication"—an important construct from the tradition of proximity-focused research, defined here as informal, unplanned interactions that occur among team members—was associated with a stronger shared identity and more shared understanding, and also mitigated the effect of distributed work on both kinds of conflict.

Given the importance of shared understanding and shared identity to the effectiveness of virtual teams, how are they created? The answers are unlikely to be mutually exclusive; the following list is drawn from literature on both variables (particularly, Hinds & Weisband, 2003; also Cramton, 2002; Hinds & Bailey, 2003; Hinds & Mortensen, 2005). Shared understanding and shared identity will increase on the basis of

1. Similarity—People who share similar demographic characteristics, occupation, national culture, and so forth, can often establish a shared identity and shared understandings more quickly and easily.
2. Shared experience—When people share experiences, they learn things about each other while also building transactive memory and establishing a common history as a referent for shared understanding and shared identity in the future.
3. Team cohesion—Greater cohesion helps build shared understanding by orienting team members toward getting to know and supporting each other. It also increases one aspect of similarity (same team) and creates a positive incentive to pursue shared experiences, both of which reinforce a shared team identity.
4. Information distribution/sharing—When routinely pursued and reinforced with group norms about open access to information/data, this can improve the shared understanding of group members. In distributed teams, it is particularly important to make sure that all information shared at one location (e.g., in a meeting) is actively communicated to all team members at another location.

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5. Spontaneous communication—This informal, unplanned communication happens naturally among proximate team members, but must be created through concerted action in virtual teams. Such communication, often dyadic, helps amplify the impact of the other four variables. Shared understanding increases because missing pieces of context can be filled in, as needed, by a particular individual; shared identity increases because spontaneous communication creates stronger social bonds between team members.

Little is known about the degree to which shared understanding and shared identity can compensate for one another; this may be task- or context-specific. Furthermore, certain individual differences precede—and will endure well beyond—virtual team membership.

Collocated teams also face challenges of building shared understanding and shared identity, but these can often emerge naturally from well-managed group processes. For virtual teams, intentional proactive efforts to build these collective resources from a team's very founding can provide a powerful countervailing force to the potential liabilities of operating over geographical distance, thereby building goodwill and psychological safety among team members, and generating resilience for the team as a whole.

Two case studies of automotive product development illustrate many of these points. Vaccaro and Veloso (2006) have provided a longitudinal case study of a geographically dispersed product-development team for a light commercial vehicle at a European original equipment manufacturer (OEM). In a multistage process, engineers first work from separate locations, then physically come together for the core design phase, and then disperse again. While separated, common experiences of training on the OEM's virtual design tools and the collective building of a database of technical documents helped develop shared understanding among project team members and became an early reference point for shared identity. While collocated, engineers drew design sketches of components and posted them for other engineers to see:

> Designers working at the same time on the same computer system began, after a brief period of collaboration, to share and develop a heterogeneous group of experiences, technological concepts, and ideas at a tacit level. [They] exploited virtual environments as a place to freely share complex experimentation and design activities. (Vaccaro & Veloso, 2006, p. 16)

This design collaboration continued with relative ease once engineers were again dispersed. The virtual design tools also helped designers do their jobs better (e.g., with more precision, visual flexibility, reusability, and a faster and wider search). During the final two stages of documentation and testing, team

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members independently completed most tasks from separate locations, and their work was then verified asynchronously by remote testers.

Helper and Khambete (2006) offered a longitudinal case study of a firm in India that provides contract engineering support for a U.S. supplier working on a U.S. OEM's automotive-vehicle project. All of the CAGE types of distance were present. The contract engineering firm created a team of two engineers, one in the U.S. and one in India, that worked together to support the automotive glass supplier to the OEM. The U.S.-based engineer, a specialist, met face-to-face with the vehicle design team at the OEM and sent certain tasks to his generalist counterpart in India. A 3-month training period for the Indian engineer, in the United States, allowed a personal relationship to develop and provided shared understanding of the context. Once the Indian engineer returned home, mutual use of collaborative project-management software and the OEM's visual design tools supported information exchange for interdependent tasks. Norms and routines for handling problems and weekly conference calls helped keep the two engineers synchronized and engaged in joint problem solving. Financial incentives tied to the completion of project tasks encouraged the U.S. engineer to rely frequently on his Indian counterpart for routine tasks, while pay and working conditions were highly desirable for the Indian engineer.

Earlier in this chapter, I focused on virtual teams and geographical distance, even though other forms of distance (e.g., cultural) may also have been operative. Now I will examine the phenomenon of blended workforces that combine regular (standard) employees and contingent (nonstandard) workers to explore whether the adaptations, remedies, and countervailing strategies utilized for geographical distance also apply to employment status distance.

Blended Workforce: Defined

A blended workforce combines individuals in standard (regular employees) and nonstandard (contingent/contract, temporary/part-time) work arrangements. The definitional issues surround how we define each category, as well as what constitutes "blending." Kalleberg, Reskin, and Hudson (2000) defined standard work as "work done on a fixed schedule—usually full-time—at the employer's place of business, under the employer's control, and with the mutual expectation of continued employment" (p. 258), and nonstandard work as lacking one or more of these attributes.

Ashford and colleagues (chapter 2, this volume) adopted the same definition, noting the value (see also Cappelli, 1999) of an implicit contrast between a normative, "standard" arrangement and a counternormative, "nonstandard" arrangement, and pointing out the consistency with Pfeffer and Baron's (1988) influential typology of three types of attachments between workers and organizations. Pfeffer and Baron's typology also maps well onto the CAGE categories used here. They distinguish attachment based on physical proximity

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(equivalent to geographical distance), administrative control (equivalent to administrative distance), or expected duration of employment (equivalent to employment status distance).

Broschak and Davis-Blake (2006) elaborated one further distinction, following Befort (2003), between those nonstandard workers who have no legal basis whatsoever to be classified as an "employee" of the organization for which they provide services (e.g., contract workers, independent contractors) and those who either do have legal status as employees (e.g., part-time or direct-hire temporary workers) or can more easily make claims to that status (under U.S. law) under coemployment doctrine (e.g., agency-provided temporary workers). The latter category will possess a status more equivalent to standard workers (or regular employees), hence they are less separated in terms of employment status distance than are contract workers.

Blended Workforce: Problems

Employment status distance has powerful consequences when nonstandard and standard workers are proximate. According to Broschak and Davis-Blake (2006)

> Past research has shown that the mere presence of nonstandard workers can affect standard workers and is associated with increased conflict and poorer relations between coworkers, decreased organizational loyalty and increased turnover (exit) intentions among standard workers, and poorer relationships between managers and standard workers. (p. 372; see also Davis-Blake, Broschak, & George, 2003; Geary, 1992: Pearce, 1993; Smith, 1994)

They go on to demonstrate that these negative consequences (specifically, propensity to turnover, more negative relations with their supervisor and their peers, and less work-related helping behaviors) have a greater magnitude as the proportion of nonstandard workers in the work group increased. Clearly, in this context, the negative consequences of employment status distance overwhelm the usual benefits of proximity (minimal geographical distance).

The reasons for these consistently negative findings are multiple. The presence of nonstandard workers may cause standard workers to worry about their own employment security; threaten their career prospects; increase their workload; violate their trust in the organization that employs them; offend their sense of fairness; and weaken the norm of reciprocity that can motivate work-related helping and organizational citizenship behaviors. What is striking is that these effects are pervasive. Not only do they (predictably) generate negative feelings toward the nonstandard workers themselves, but they also negatively affect relations with supervisors and peers (e.g., standard workers/regular employees) as well as overall attachment to the organization.

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Broschak and Davis-Blake (2006) argued that employment status is an organizationally determined characteristic of high salience to both standard and nonstandard workers. The strong consequences of these status distinctions (e.g., employment status distance) support Reskin's (2003) argument that organization-initiated actions that create difference can have the same effects on attitudes and behavior as differences based on ascriptive characteristics (gender, race, age)—namely, negative feelings, stereotyping, and dispositional attributions.[9] The offshoring of software development studied by Metiu (2006) bears this out. Barley and Kunda's (2004) ethnography of itinerant IT contractors (summarized in the following section) found a slightly different dynamic. Contractors faced client-initiated status differentials meant to demonstrate (for the benefit of regular employees) that they were "outsiders," yet this was partially offset by the client's high need for their specialized expertise, which caused managers to integrate them into core work routines.

Blended Workforce: Adaptations, Remedies, and Countervailing Strategies

Here I briefly summarize research also identifying adaptations and policies that can potentially deal with problems of the blended workforce. Here we can again differentiate between actions/strategies that minimize distance and those that enhance capacity for dealing with distance.

Work restructuring falls in the first category. Broschak and Davis-Blake (2006) found that task-related interaction between standard and nonstandard workers often leads to negative supervisor-subordinate relations because of tensions around the allocation of work tasks, the consequences for work load, and the quality/efficiency of task completion. They suggested that supervisors can structure work to minimize interdependence between workers with different employment status, or even physically segregate them on separate production lines or in separate facilities. (Here, intriguingly, increased geographical distance is hypothesized to help with reducing problems of employment status distance.)

Allowing/encouraging more social interaction between standard and nonstandard workers appears to enhance individual and group capacity to deal with employment status distance. Broschak and Davis-Blake (2006) found that such social interaction—explicitly informal, deliberately not task-oriented; intended to develop interpersonal relationships—increases work group and organizational cohesion and expressions of social support, reduces tensions, and boosts work-related helping behaviors.

Broschak and Davis-Blake (2006) found that the tensions are greatest between nonstandard workers and lower level standard workers. This is very likely attributable to policies that allow the best-performing temporary workers to win full-time jobs as regular employees. Eliminating the prospect of direct competition for future jobs is a potential remedy. Another suggestion is to offer equivalent training opportunities to both standard and nonstandard

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workers. Combining these groups in training classes may reduce the salience of employment arrangements; this also allows for increased non-task-related social interaction.

Both of these examples are approaches that aim to increase shared understanding and shared identity. Nonstandard workers engaged in an organization's central activities on an ongoing (and physically proximate) basis face an ambiguous situation vis-à-vis their identity. Shared identity in this context, where employment status distance separates the two types of workers, may take the form of feelings of belonging to the broader organization. As Ashford and colleagues (chapter 2, this volume) pointed out,

> It is through relationships that nonstandard workers come to understand who they are relative to the organization. Their *experience* of belongingness (or perceived insider status) …is sensed not through the objective details of their work arrangement but in their daily encounters with others who grant them a sense of organizational membership and acknowledge their claims that they belong to the social fabric of the organizations. (p. 95)

It is in this sense that both informal social interaction and mutual training help build a sense of shared identity.

Similarly, when nonstandard workers perceive the organization's values as aligning with their own, their identification with the organization is stronger (George & Chattopadhyay, 2005). Increasing a nonstandard worker's sense of identification with the organization for which she or he provides services does not necessarily eliminate employment status distance (unless it has the effect of raising expectations, e.g., of shifting from temporary to permanent employment status). It does appear, however, to increase a nonstandard worker's capacity for handling this distance.

Case studies and ethnographies of blended workforces doing information technology (IT) work illustrate many of these dynamics. The companies that are the largest users of IT services use several types of IT employees simultaneously: their own IT staff, independent contractors, and consultants (who may also use a mix of their own staff and contractors). They choose this mix both for numerical flexibility (contractors and consultants can be managed as variable costs, with contracts ended or cut back when business conditions dictate) and for access to specialized skills (Abraham & Taylor, 1996; Houseman, 2001).

Bidwell (2006a, b) provided a longitudinal case study of IT consultants and independent contractors working side by side with regular employees of their customer, a large financial services firm. He found that these different types of IT workers were often managed by the firm's IT department in

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very similar ways. The firm often employed consultants and contractors alike for lengthy periods; while the average was 3 years, many had worked for 10 years or more. Almost all projects were staffed with a mix of all three types of workers. Employment status had little impact on the work performed by individuals, or on how the individuals were perceived. Nonemployees were as likely as employees were to be staffed on projects said to be most important to the organization or having the longest term consequences. Managers saw consultants/contractors as being equally motivated and committed as regular employees were, as well as having equivalent levels of firm-specific skills. The managers also disagreed with the idea that they had more control over their regular employees. The fact of physical proximity combined with the firm's high dependence on the contractors' specialized knowledge appears to have overcome the high level of employment status and cultural distance between the employees and the contract workers.

Barley and Kunda (2004, 2006) examined IT contractors as a new kind of professional. Their ethnographic data suggest that these contractors do experience employment status distance that imposes barriers on their integration into the task work of their client organizations. Whether doing distributed work from a cubicle at the client's office, or from their home, contractors confront many ambiguities and contradictions.

> Although a contractor's position in a client's organization was usually defined well enough in legal terms, how he or she actually fit into the social fabric of organizational life was problematic. Because everyday life in most firms was still governed by traditional notions of employment, the people with whom contractors worked struggled with conflicting images of the contractors' rightful place and the mixed feelings these images generated.
>
> To make the most of the contractors' skills, hiring managers discovered they had to integrate the contractor into the flow of activities and the network of relationships…. At the same time….contractors knew that no matter how appreciated, accepted, and integrated they became, they were still outsiders. Firms repeatedly drove this fact home in countless, symbolic ways, from the color of the contractors' badges to the size and location of their office space. (p. 49)

Yet Barley and Kunda (2004) also discovered that regular IT employees and IT contractors can coordinate their efforts on interdependent tasks with relative ease. The regular IT employees can be viewed as "corporate professionals," who perform their professional duties as full-time employees. Many contractors had held such positions themselves and had exited corporate life to seek an alternative. When contractors come back into corporate settings, the two groups can relate, at some level, as fellow professionals. These occupational

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bonds between itinerant IT contractors and corporate IT professionals create shared understanding, although their interaction also highlights the organizational privileges and benefits enjoyed by employees and the temporal flexibility and (often) higher pay of the contractors, creating barriers to shared identity.

Summary: Doing a Distance Inventory

To summarize this section, I provide, in Table 12.3, a "distance inventory" that shows, for the types of distance in the modified CAGE framework, those adaptations, remedies, and countervailing strategies (ARCS) that are distance-minimizing and those that enhance individual, group, or organizational capacity to deal with distance.

Managing People Over Distance: HRM Practices and Employment Policies

Previously, I examined the problems that arise when managing people over distance—geographical and otherwise—and potential adaptations, remedies, and countervailing strategies. In this section, I focus on HRM practices and employment policies that can potentially support these adaptations, remedies, and countervailing strategies, continuing to compare the same two contexts: (a) virtual teams and (b) blended workforces of standard and nonstandard workers. First, I offer a conceptualization of how to think about managing people over distances that draws on the literature of strategic human resources management (SHRM).

Distance From a Strategic HRM (SHRM) Perspective

Research on SHRM seeks to identify particular configurations of HR practices that are well-aligned, both externally—with organizational strategies (in order to develop capabilities, knowledge, and social capital needed to achieve competitive advantage)—and also internally—such that practices are logically consistent and mutually reinforcing (in order to achieve systemic and synergistic benefits that are difficult to imitate and thus sustain competitive advantage). Much SHRM research searches for these configurations in relation to organizational performance. Sometimes one (or more) "bundles" of HR practices are identified that predict performance well for a sample of organizations/establishments in a specific context (Batt, 1999; Delery & Doty, 1996; Huselid, 1995; Ichniowski, Shaw, & Prennushi, 1997; MacDuffie, 1995), and sometimes successful firms are studied to inductively extract the common patterns in their HR practices (O'Reilly & Pfeffer, 2000; Pfeffer, 1994, 1998). The resulting portrayal of "high performance work systems" often provides what appear as a set of "best practices" whose benefits are argued to be broadly applicable, at least to the context under examination.

The literature on "high performance work systems" (HPWS) has faced several challenges and criticisms. First, the practices that are said to predict

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Table 12.3 Distance Inventory for Managing Over Distance

	Distance Characteristics	Distance-Minimizing Actions	Actions to Maximize Capacity for Handling Distance
C: Cultural	Mix of national and organizational culture	Cultural homogeneity of interacting individuals	Select for cultural awareness; set norms of discussing cultural issues; direct exposure by visiting different locations; shared experiences in cross-cultural groups
A: Administrative	Relationship among organizations (e.g., supplier-customer? Merger or acquisition?)	Collocation of all individuals at focal organization, applying the same administrative procedures as much as possible	Common access to the same administrative and communications systems; common/shared training on those systems; anchoring discussions on shared information, particularly visualizations
G: Geographic	Physical proximity or dispersion; distribution of individuals across various locations	Periodic face-to-face meetings, ideally rotated across locations	Norms of communicating contextual information related to location; encouraging spontaneous and informal dyadic communication
E: Employment Status	Mix of standard & nonstandard workers	Minimize status markers and differentials; collocation when possible	Encourage informal interaction; emphasize contract worker's identification with goals and values of the firm; common/shared training

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superior performance (and even sustainable competitive advantage) have diffused much less widely than economic theory would predict (Osterman, 1994; Pil & MacDuffie, 1996). In addition, while visible economic benefits may accrue from certain configurations of HR practices, implementing these practices may also incur additional costs, yielding a questionable contribution to profitability (Batt, 2002; Cappelli & Neumark, 2001). Third, even where outcomes of HPWS are entirely positive for the firm, the consequences for the employees who are involved—in terms of workload, share of productivity gain received as compensation, morale, stress, and so forth—may be negative (Applebaum & Batt, 1994; Osterman, 2000). In addition, the "one size fits all" prescriptions of much of this literature do not match the proliferation of employment arrangements and work contracts found at most contemporary firms (Lepak & Snell, 1999; Matusik & Hill, 1998).

Scholars have responded by offering frameworks of contingent relationships between various HR approaches and particular business strategies (Arthur, 1992; Delery & Doty, 1996; Snell & Youndt, 1995). These are relevant to our inquiry into managing people over distances in two ways. First, organizations seek different things in distributing work over distance, and strategies for best managing the people involved in distributed work should depend on those organizational purposes. Second, for a given purpose, different HR configurations might be better aligned with managing particular types of distance (C, A, G, and/or E). A full examination of these issues is beyond the scope of this chapter, but I will examine one such contingency framework to assess its applicability to virtual teams and the blended workforce.

Just as predictions about the diffusion of high performance work systems have not always held up, contingency frameworks have also struggled to incorporate the diversity of work and employment arrangements in this period of disaggregation of jobs, careers, and firms. Early SHRM contingency theories built directly on the resource-based view of the firm and the argument that firms should develop a particular "core competence" that provides competitive advantage and externalizes all "noncore" activities. Translated into employment arrangements and HR practices, this meant managing "core" employees (those with human and social capital crucial to the firm's core capability) in a way that would stimulate their motivation, win their commitment, and strengthen/prolong their attachment to the firm, while either externalizing (outsourcing to another firm) or peripheralizing (hiring noncore employees whose value to the firm is less) those activities not related to the core capability.

While some firms have followed this pattern, many others have taken actions that contradict the anticipated contingencies, such as outsourcing activities considered core (Azoulay, 2004), assigning core activities to contractors or other nonstandard workers (Bidwell, 2006a, b), managing core employees in ways that weaken their attachment (Cappelli, 1999), or acquiring firms for their employees'

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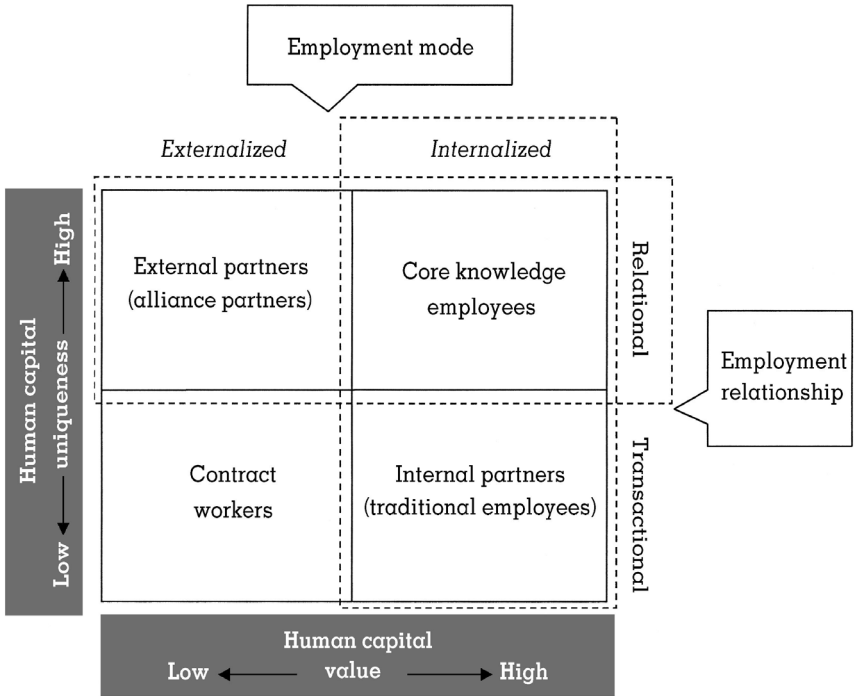

Figure 12.1 HR Architecture

human and social capital, and then managing the integration process in ways that prompt most of those employees to leave the firm (Hitt, Ireland, & Harrison, 1991). These contradictory actions can be fruitfully juxtaposed with the contingency frameworks to see what can be learned.

Lepak and Snell (1999) and Kang, Morris, and Snell (2007) presented contingency frameworks relevant to my purposes. Lepak and Snell set out a "human resource architecture" that shows a portfolio of different approaches to managing stocks of human capital depending on their value and uniqueness in relation to achieving the firm's strategy (Figure 12.1). The resulting four approaches are differentiated in terms of employment mode (internalized vs. externalized) and employment *relationship* (relational vs. transactional).

For human capital that is highly valuable and highly unique, their framework specifies investing in the development of core employees managed for high commitment and a long-term relationship with the firm (internalized and relational). In the opposite case—human capital of low value and low uniqueness—it points toward contracting out through transaction-oriented arrangements that are managed for contract compliance (externalized and transactional).

For human capital that is unique and scarce, yet not central to the firm's strategy of value creation, the framework specifies establishing alliances with

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external partners (individuals or firms) and investing heavily in establishing an effective collaborative relationship (externalized and relational), rather than internalizing the human capital through an employment relationship. Finally, for human capital possessing skills and knowledge high in value for achieving the firm's strategy, but relatively abundant and easy to access, the framework specifies hiring individuals as regular employees, but not anticipating long-term employment or making efforts to develop firm-specific expertise (internalized and transactional); this employment relationship is designed to last only as long as it serves the needs of both parties.

Applying the framework to the two contexts I have used in this chapter, intraorganizational virtual teams would typically be deployed in one of the two "internalized" quadrants: either (a) entirely among core employees managed for a long-term relationship under a high commitment approach, or (b) between such core employees and other internal employees possessing other necessary, value-added skills. The blended workforce context would be managed according to one of the two "externalized" quadrants, either (a) between core employees and external alliance partners possessing unique and complementary expertise, under a collaborative relationship in which the focal firm invests heavily, or (b) between regular employees and contract workers governed by a well-defined transactional contract.

Kang and colleagues (2007) expanded on the HR architecture framework, focusing on knowledge flows (Table 12.4b). They argue that when firms want to pursue exploitation-related learning, they take a "cooperative" approach to the underlying social relations, emphasizing intensive interactions between core-knowledge employees and regular employees within a strong/dense network, drawing on the generalized trust that comes from a shared collective identity and shared understanding of the firm's knowledge architecture—that is, the links among components of specialized knowledge. In contrast, when firms want to pursue exploration-related learning, they take an "entrepreneurial" approach to social relations, emphasizing dispersed interactions between core-knowledge employees and external alliance partners within a weak/nonredundant network, working to building resilient dyadic trust and emphasizing exchanges of complementary, cospecialized knowledge that can potentially generate something new and innovative.

It makes sense that firms would think of "intraorganizational virtual teams" from an internalized, cooperative perspective, expecting that the work of such teams should be facilitated by the shared identity of being employees of the same firm and the shared understanding that comes from knowing how the firm organizes its core knowledge. From the perspective of the Kang and colleagues (2007) framework, virtual teams are often managed as if the cooperative social context available for collocated core employees is a resource upon which team members can readily draw. This includes a dense network of relationships with overlapping/redundant ties, the easy (even swift)

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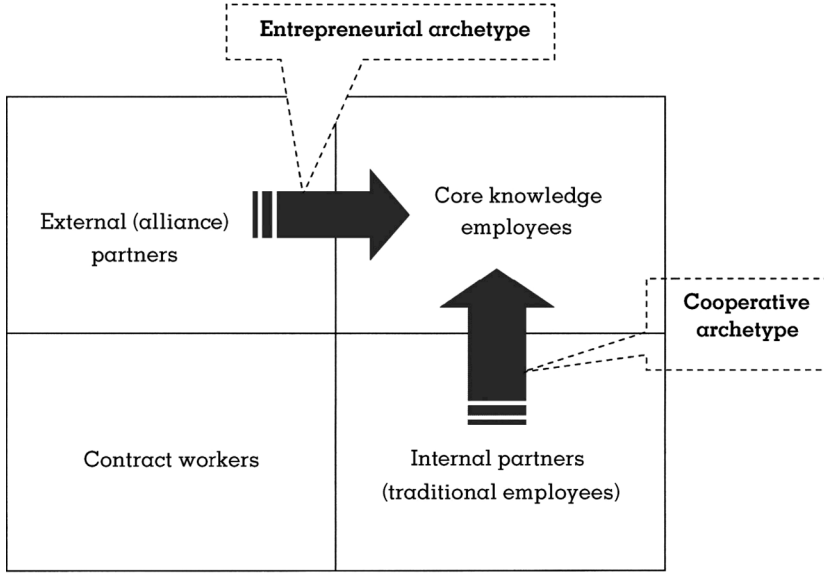

Figure 12.2 Relational Archetypes in the HR Architecture

institutionalized trust from a shared organizational membership, and awareness of who knows what within the firm's knowledge system.

Similarly, it makes sense that firms would think of a blended workforce as involving externalized relationships that should either be managed as arm's-length contracts around prespecified tasks or as collaborations on a project basis involving complementary and cospecialized knowledge assets. In terms of the Kang and colleagues (2007) framework, where rare or unique knowledge is involved, the blended workforce requires significant investments in the relationship between core-knowledge employees and external partners. This is done in order to tap the unique knowledge that lies outside the firm's internal network, to build dyadic trust, and to deepen shared expertise for the project; otherwise, where little unique knowledge is involved, the external contracting arrangement can be approached as a simple transaction with no relational consequences.

Yet, much of what has previously been reviewed from the literature on virtual teams and blended workforces suggests the opposite. The loss of proximity affecting intraorganizational virtual teams means that shared understanding and shared identity are weakened and strained. Virtual teams perform best when their members are highly aware that they must thoroughly explain their context and clearly articulate their special knowledge, making sure that communications have cues left in. This may actually be easier to do if one frames the virtual team as an alliance among various partners, each with valuable and complementary knowledge assets, because this will prompt

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explicit and careful attention to developing a highly collaborative relationship and filling in missing bits of context knowledge. Put differently, a powerful way to deal with the problems of geographical distance is to act as if fellow team members are highly valuable collaborators who do not (yet) know you well, with payoffs that will remain high as long as everyone works very hard to establish an effective working relationship.

In turn, with the blended workforce, when organizations reinforce the externalized nature of the relationship, either with alliance partners or transactional contracts, the consequences of making these differences salient can be strongly negative. The literature reviewed earlier in this chapter suggests that nonstandard work arrangements are best managed through minimizing the salience of employment status distance and increasing the sense of shared understanding and shared identity. Put differently, a powerful way to deal with the problems of employment status distance is to treat nonstandard workers more like regular employees and to encourage informal social interaction and collective problem-solving between these two groups.

Ultimately, choices about managing people over distance must wrestle with the same issues found in the SHRM literature. Choices about what kinds of human/social capital are needed and how HR systems should be implemented to develop capabilities should be contingent upon what the firm needs to achieve with a particular strategy.

Yet there may be certain approaches to developing HR capabilities with universal applicability (as the HPWS research suggests) because they respond to something fundamental about how people are motivated, how they learn, how they interact with others, how they draw upon tacit and articulated knowledge, how they develop trust and handle conflict, and how they respond to change. In particular, when managing people over distance, developing communication channels and norms that emphasize cues left in, and increasing the level of shared understanding and shared identity among individuals and groups, may both be universal best practices that should be applied in relation to any kind of distance. The need to deal with these fundamentals of human behavior within employment and work relationships may trump the logic associated with a contingency framework.

Keeping in mind this SHRM perspective on managing people over distance, I now turn to a detailed examination of HR practices in key areas.

HR Practices for Managing People in Work Distributed Over Distances

For both virtual teams and the blended workforce, the literature review and case examples previously examined in this chapter display the problems of managing work distributed over cultural, administrative, geographical, and/or employment status distance. In this section, I will focus on remedies for those problems, focusing on five key HR areas: (a) selection, (b) training and development, (c) task design, (d) compensation, and (e) performance

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management. Most of the available literature reviewed here focuses on virtual teams, but I will devote attention to the "blended workforce" as well, even if only speculatively.

Selection. In the context of virtual teams, careful selection of the individuals involved may be possible if a new team is being created around a particular project. In other cases, the membership of virtual teams may not be something a manager can realistically control; the task may dictate that certain individuals be chosen. In either case, the composition of the virtual team will affect its work processes and outcomes.

Most authors agree that virtual teams will benefit from selecting for the same general attributes that characterize members of effective face-to-face teams—namely, general cognitive abilities, task-related attributes (e.g., conscientiousness, integrity), and socioemotional attributes (e.g., extroversion, emotional stability, agreeableness) (Barrick, Stewart, Neubert, & Mount, 1998; Neuman & Wright, 1999; Stevens & Campion, 1994). Others argue, however, that teams that are high on a dimension of "virtualness" (e.g., high separation by geographical distance and high reliance on ICT to accomplish team tasks) will require members with additional attributes.

Blackburn, Furst, and Rosen (2003) urged consideration of the KSAs (knowledge, skills, abilities) required by the particular distributed work situation, such as

1. Self-management—self-starting, able to set personal goals and fulfill them in the absence of close supervision, to work in isolation with sporadic feedback, and so forth
2. Communications—sending communications effectively so they are thoroughly understood; choosing the medium in accordance with the nature of the inquiry, task, and timeframe; and proactively gathering and utilizing feedback
3. Cultural sensitivity—actively learning about cultural differences, paying attention to how they might affect group process, and developing norms that foster discussion of cultural differences and how they may be affecting the shared understanding of the problem
4. Technology—a comfort level with the technologies needed to communicate and coordinate over distance, and a willingness to adopt new technologies as needed

These authors also speculated about how personality testing could help with the staffing of virtual teams, suggesting three clusters of traits that would be particularly applicable: (a) ability to set personal goals, take initiative, and work autonomously; (b) capacity for emotional control, high tolerance of ambiguity, and openness to new experience; and (c) listening empathically and cross-cultural sensitivity.

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Hertel, Konradt, and Orlikowski (2004) compared attributes of team members in more and less effective virtual teams of an Internet provider company. The authors developed a multiscale questionnaire covering task-related, team-related, and telecommunicating-related attributes and obtained team effectiveness assessments from managers overseeing the teams. These scales showed good reliability and a composite measure, the Virtual Team Competency Inventory, showed a relatively strong correlation ($r = 0.40$) with team effectiveness measures. Among individual items, measures of self-management skills, intercultural skills, and perceived interpersonal trust made particularly strong contributions.

Diversity of team members is often a central concern at the point of selection. In this context, team members for virtual teams are often selected because of their unique perspective or expertise, as well as knowledge that may itself be derived in part from their geographical location (e.g., about a particular market). Griffith and Neale (2001) proposed that virtual teams will generally have greater diversity than teams whose members are more physically and temporally proximate on three dimensions: (a) informational diversity, (b) social category diversity, and (c) values diversity. Geographical dispersion and functional heterogeneity (common on virtual teams), in combination, will generate both informational and social category diversity. In their view, values diversity arises not due to selection/composition, but because virtual teams may have more difficulty establishing shared values, or at least will require more time for this to be achieved.

Jarvenpaa and Leidner (1999) explored whether certain cultural backgrounds might fit the requirements of virtual teams better than others might. Specifically, they hypothesized that team members from individualistic cultures might be more prone to trust than members from collectivistic cultures because the former have a greater willingness to respond to ambiguous messages. They identified a counterhypothesis: that members from collectivistic cultures might be quicker to identify with a group and hence achieve a shared group identity more readily than individualistic members. Their empirical work showed no effects in either direction. Hertel, Giester, and Konradt (2005) speculated that both individualistic and collectivistic cultures may offer advantages for virtual teamwork; the physical isolation that members may experience during distributed work might be easier for the former group to tolerate, yet the latter group might more frequently initiate interpersonal contact with other team members to alleviate this condition.

Axtell and colleagues (2004) argued that the strongest effects of diversity resulting from selection of virtual team members may come from the combination of multiple dimensions of diversity. This is similar to the notion of multiple sources of distance identified by the CAGE framework. Most research on diversity suggests a U-shaped relationship between degree of differences among team members and team effectiveness; too much diversity

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can lead to both relationship- and task-related conflict that can be difficult to manage (Pelled et al., 1999; Williams & O'Reilly, 1998).

Furthermore, where members of virtual teams are clustered in different locations, the group at each location is likely to share attributes along multiple dimensions (e.g., nationality, language, function, educational background, socialization experiences) and to strongly differ from the group at another location. This increases the risk of what Lau and Murnighan (1998) called a compositional "faultline"; strong faultlines increase the likelihood of subgroup formation and conflict among subgroups, which can reduce team effectiveness. Hence, there is value in avoiding too much homogeneity at any one location; a moderate level of diversity along multiple dimensions should be sought at each geographical location.

Heckscher and Adler (2006), along with Maccoby (2006), emphasized the importance of selecting individuals that have an "ethic of contribution" and an "interactive social character." "Ethic of contribution" combines two elements: (a) an individual's commitment to contributing to the group's purposes and not simply fulfilling one's own job responsibilities, and (b) a similar commitment to contributing to the success of others, based on understanding their concrete interests and identities and helping them to achieve their personal goals as well as those of the group. Interactive social character is internalized in an individual's motivational system and is manifest in "interdependent self-construals: rather than orienting to a single source of morality and authority, the personality must reconcile multiple conflicting identities and construct a sense of wholeness from competing attachments and interactions" (Heckscher & Adler, p. 17). Whether these traits can be assessed in advance or only become apparent from an individual's performance during a collaborative project is not specified, but clearly, an individual with a track record demonstrating these qualities would be an excellent choice for collaborative distributed work.

I found no literature dealing directly with the selection of contingent, nonstandard workers. Undoubtedly, the specialized knowledge of a high-skilled nonstandard worker is typically the primary basis for selection, while pursuing low cost in choosing nonstandard workers for routine, noncore tasks may dominate any selection considerations. Still, the analysis discussed earlier in this chapter suggests that similarity along certain dimensions can aid the development of shared understanding and shared identity; the common occupational identity of IT contractors and corporate IT professionals is one example. The risk of faultlines between standard and nonstandard workers is high if there is too much homogeneity within each type of worker and too much heterogeneity across the two types.

Training and development. Blackburn and colleagues (2003) called attention to a variety of areas for training that can support the work of virtual teams: (a) helping teams develop their social capital, learn to use technologies that will

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help them communicate, and become proactive about monitoring group processes, (b) offering feedback, and (c) checking on group members that seem to be dropping out (inactive, no communication) or not fulfilling responsibilities (tasks not completed on time, or poorly done).

Relatively little research has investigated the impact of training of this kind. Warkentin and Beranek (1999) reported an exploratory study of student teams working on an eight-week project, some of whom received initial face-to-face training on communications aspects of virtual teams. While teams that received this training reported higher cohesion and member satisfaction than the control group, no impact on team performance was found. Hertel and colleagues (2004) reported results from a special 2-day training provided to 10 virtual procurement teams within the same large company. This training focused on three areas: (a) clarification of team goals, (b) effective use of different communications media, and (c) reaching early agreement on team norms and processes (e.g., for project management, conflict resolution, routine communications). Three months later, team members indicated significant improvements in the trained areas and perceived improvements in team performance and team morale/climate. This limited evidence suggests that training designed to support the unique aspects of distributed work, particularly in areas where virtual teams are known to have greater difficulties than face-to-face teams, can be effective.

Research on transactive memory has found that groups whose members have trained together have more developed cognitive systems for organizing their knowledge of who knows what (Liang et al., 1995; Moreland, Argote, & Krishnan, 1998). While this is particularly relevant for virtual teams, it also has implications for a blended workforce. As previously noted, Broschak and Davis-Blake (2006) found that shared training is one way to make employment status differences between standard and nonstandard employees less salient, and hence, to facilitate both shared understanding and shared identity for the two groups.

Toyota and other Japanese companies have greatly increased their use of contract workers in their assembly plants in Japan, to levels as high as 30–35%, in an effort to preserve employment continuity for its core employees while being able to respond to unpredictable swings in market demand. Toyota trains regular and contract workers together and intermingles them on the assembly line (although certain jobs are assigned to younger vs. older workers based on physical demands, and more of the former are contract workers); their uniforms do not identify their employment status (author's field notes). Given the importance of shop-floor problem solving in support of continuous improvement (*kaizen*) to Toyota's core capability of achieving both high quality and high productivity, the company has given careful attention to how to effectively integrate standard and nonstandard workers.

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Task design. Research based on experimental designs that compare face-to-face and computer-mediated groups reveals intriguing differences in performance on different kinds of tasks, based on McGrath's (1984) typology of generating (e.g., brainstorming), choosing (e.g., decision making), negotiating, and execution tasks.

Many studies have examined methodologies for electronic brainstorming. This low interdependence task appears to work well when members are physically separated. The software to support electronic brainstorming typically gathers a first set of ideas from all individuals, and then presents each participant with a random set of ideas from the aggregated group, in order to stimulate further idea contributions. Early studies concluded that this approach leads to higher performance because it prevents known motivation and coordination problems associated with proximity (Dennis & Valacich, 1993), such as production blocking (e.g., turn-taking behavior—since only one person can speak at a time—that may prevent someone from voicing their idea) and evaluation apprehension (fear of what others will think of your idea).

Later studies argued against these findings (Pinsonneault, Barki, Gallupe, & Hoppen, 1999; Ziegler, Diehl, & Zijlstra, 2000). Being presented with a list of ideas from other group members early in the brainstorming process may channel subsequent ideas in a particular direction. The anonymity of the process may reduce evaluation apprehensiveness, but it may also reduce engagement in the task and commitment to the group. Finally, the best brainstorming performance (e.g., that which generates the highest number of unique ideas) continues to be demonstrated by nominal groups (e.g., individuals do not actually interact at all during the brainstorming; rather, each individual generates his or her own list, and then these lists are aggregated).

Research on decision-making tasks focuses on computer-mediated processes that allow discussion and multiple rounds of voting to reach a decision. In a 2002 meta-analysis, Baltes, Dickson, Sherman, Bauer, & LaGanke (2002) concluded that computer-mediated decision processes have a number of disadvantages: they take more time, less information is exchanged, and the satisfaction of team members is low. Others argue against this conclusion, because these results are based on ad-hoc teams carrying out a one-time task under experimental conditions. Real virtual teams, with more time to adjust to the effects of geographical dispersion on their decision processes and to learn how best to use technology in support of decision making, might have a different result (Hollingshead & McGrath, 1995; Walther, 2002).

Negotiating tasks are regarded as highly complex, with high interdependence and high needs for communications bandwidth, all of which are provided best in face-to-face situations. Similarly, execution tasks often have a physical logic of collocation, so virtual teams do not usually perform them. Of the relatively few studies conducted on these tasks, results are inconclusive.

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The general theme connecting these studies of task design is that virtual teams are well-suited to certain tasks (e.g., idea generation) and not to others (e.g., decision-making)—suggesting that the degree of interdependence of a task may be the critical underlying dimension. High task interdependence requires a great deal of communication and coordination among team members and makes the performance of one member dependent on the performance of other members. Given that virtual teams need to make more effort to communicate and coordinate than face-to-face teams, because of less unplanned interaction and spontaneous communication, less information content, and fewer interpersonal cues during each interaction, virtual teams may do better where less task interdependence is involved. Indeed, as previously noted in this chapter, the modularization of system/product designs and the structuring of work to minimize coordination requirements are primary remedies to problems of geographical distance.

Yet at the same time, high team interdependence tends to be highly associated with team cohesion, trust, and the sense of indispensability of personal contributions to the team. This suggests a possible U-shaped relationship between task interdependence and team performance, with low performance associated with too little or too much interdependence (Kirkman, Rosen, Tesluk, & Gibson, 2004). Hertel and colleagues (2004) investigated this relationship for different stages of a team's development, hypothesizing that high interdependence may be helpful at the start of a team's activities, when norms and routines are being established, whereas at a later stage, teams could benefit from less interdependence so individuals could shift effort from coordination to task completion. They found that interdependence had a strong positive relationship to team effectiveness during the first 12 months, but that the relationship diminished after that point.

For the blended workforce, work structuring is often chosen as a means of reducing task interdependence between standard and nonstandard workers. The same advantages and disadvantages should apply; less task interdependence means minimizing social relations problems, but also less opportunity to build shared understanding and shared identity.

In summary, distributed work characterized by highly interdependent tasks may pose large challenges of coordination and communication, but these tasks may also help those doing the work develop a high degree of shared understanding and shared identity, essentially increasing the capacity to deal with these challenges. Given that it is exactly to accomplish knowledge-intensive, communications-rich collaborative tasks that distributed work is often established, this latter perspective may be most helpful as a guide to practice.

Compensation. Edward Lawler (2003) examined methods for adapting pay/reward systems to the challenges of virtual teams. He distinguished between four types of teams and the reward systems that suit each best: (a)

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parallel, (b) production/service, (c) project, and (d) management teams. The types most likely to be established as virtual teams are production/service and project teams.[10]

The key differences between production/service and project teams is that the former are often made up of employees who share a particular expertise and perform similar work on an ongoing basis, whereas as the latter are deliberately made up of employees from different areas of expertise (indeed, even different organizations). Each person contributes something different, but according to common goals and processes. For production and service teams, a team bonus is appropriate if the team's tasks are independent, versus if those tasks are heavily interdependent with those of other parts of the organization, in which case a business unit bonus is more appropriate. The risk of maintaining individualized pay for members of production/service teams is that insufficient attention will be paid to the activities that may reduce individual task output but boost the team's overall performance.

Project teams—by far the most common form of virtual team—pose particular compensation challenges. While members are often chosen for their specialized expertise, they often need to learn new things from fellow team members to be able to work with them. Accordingly, project teams are particularly well-suited to knowledge-based (vs. traditional job-based) pay systems. In addition, because projects follow their own timetable, rewards should be tied to achievement of project goals, rather than the traditional approach of a fixed schedule, such as annual performance appraisals and bonus awards. Basing bonuses on objective performance metrics is best, to facilitate goal setting and strengthen performance-to-outcome expectancies.

Where social integration and shared identity are important, team and organizational bonuses are more appropriate than individual bonuses. Lawler (2003) argued that when virtual team members come from different organizations, rewarding team performance may be particularly important. Since most incentives will be aligned to each member's respective organization, such a bonus can reinforce both shared identity and joint accountability for results. This should still be supplemental to rewards provided through each member's home organization, so that there are proper incentives for the member to achieve each organization's goals as well.

In the blended workforce, differentiation in compensation method is often central to the distinction between standard and nonstandard workers (Lautsch, 2003), with the latter often paid on an hourly basis for specified tasks on a particular project and not receiving performance-based pay or any nonmonetary compensation (e.g., benefits, awards, etc.). This difference, along with the ability to end the contract at any time, is central to the flexibility that nonstandard workers provide the firm.

Barley and Kunda (2004) wrote about the tensions between standard and nonstandard workers caused by compensation issues; these become

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particularly inflamed when IT contractors are collocated and the details of their much-higher (on an hourly basis) pay becomes known to the regular employees. Proximity generally heightens equity comparisons for a relevant and accessible comparative other, and the shared occupational identity between "corporate professionals" and IT contractors that can often facilitate their mutual work here increases the likelihood of perceived inequities.

Performance management. All indications are that virtual teams benefit as much as face-to-face teams from having clear goals and objectives, participating in setting those goals, and receiving performance-related feedback. Explicit feedback from a performance-management system may be particularly important for virtual teams where information about the goal achievements of geographically distributed members is difficult to obtain and opportunities for informal feedback during unscheduled face-to-face encounters are few. Shepherd, Briggs, Reinig, Yen, and Nunamaker (1996) found that including graphical performance feedback in electronic brainstorming groups led to higher performance.

Providing peer assessments as part of this feedback can be helpful in building a stronger sense of group identity. Peer-based performance feedback can help build trust and prevent feelings of exploitation. While a lack of process feedback in computer-mediated groups yields a reduction in social exchange, the provision of such feedback can increase motivation, satisfaction, and performance (Weisband, 2002).

Performance management is rarely a formalized process with respect to nonstandard workers, and regular employees often perceive contract workers as being less committed to the quality of the work being done than are the regular employees (Broschak & Davis-Blake, 2006). In fact, however, contract workers' desire for an ongoing relationship (either a return engagement as a contractor or being hired as a regular employee) makes them potentially very responsive to feedback. Where nonstandard workers are integrated with standard workers on a project, it may be relatively straightforward to engage them in performance-management activities (postproject appraisal by supervisor; peer evaluations). However, this could raise anxieties of regular employees about potential negative consequences for their job or career from this comparative appraisal, and these negative effects may outweigh the positive benefits of feedback to nonstandard workers. This suggests that it may be better to keep appraisal processes of standard and nonstandard workers separate.

Summary. This brief review of HR practices that can support distributed work reveals that, in many cases, the findings are not tremendously different for virtual versus face-to-face teams, nor are they for standard versus nonstandard workers. Furthermore, while there is ample speculation about why the conditions of virtual teams or nonstandard workers might point toward particular

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choices of HR policies, there is relatively little research at this point to guide those choices.

The Bigger Picture: Employment Policy and Managing Across Distance

The vast array of new approaches to managing distributed work highlighted earlier in this chapter poses important challenges to the prevailing mindsets, regulatory frameworks, and laws associated with employment policy. I will provide a series of examples. The U.S. examples focus on how employment policies are out of step with the reality of blended workforces marked by high employment status distance, while the international examples focus on the challenges of managing employment issues when work is distributed both across geographical and administrative/political distance.

Burton, Bidwell, Fernandez-Mateo, and Kochan (2004) described how U.S. employment policy, with its roots in 1930s New Deal legislation, has taken the individual male breadwinner as the focal employee and the individual employer as a focal actor through which social benefits reach that employee:

> The individual employer is held accountable for complying with the full range of labor and employment laws such as labor relations, health and safety, equal employment opportunity, family and medical leave, etc. Moreover, since the New Deal framework was put in place, individual firms have been expected to provide other functions and benefits, such as health insurance, pensions, and training and development. All of these are predicated on (a) a long-term, ongoing employment relationship; (b) a clear definition of who is the responsible employer; and (c) a clear definition of who is and who is not an employee. (p. 20)

The varying employment relationships now evident in the organizing of distributed work create ambiguity around all of these core definitions.

The consequences of this ambiguity are illustrated by two U.S.-based examples: (a) worker safety in the petrochemical industry and (b) independent contractors in the information technology (IT) industry.

Worker safety in the petrochemical industry. In this setting, negative aspects of the working relationships between regular employees and contractors have resulted in extreme safety violations and deaths (Kochan et al., 1994). Heavy equipment in this highly capital-intensive industry requires regular shutdown periods for maintenance and retooling. Firms hire contractors to supplement maintenance crews and minimize downtime without adding to their full-time workforce. During the 1970s and 1980s, labor costs began to diverge between unionized, full-time employees and nonunion contractors; by 1990, the use of contractors had increased by 15%.

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A wide range of employment and labor relations conflicts followed that, according to Burton and colleagues (2004), resulted from petrochemical firms following the advice of their labor lawyers.

> To avoid being liable as the employer or as a co-employer [following the so-called "co-employment doctrine"], there should be a clear separation of the full range of HRM functions (recruitment, selection, training, supervision, labor relations, and compensation) between the regular and contract workforce. This, not surprisingly, led unions in the industry to argue that the growth of contract workers threatened the employment security of their members and indeed the safety of their plants. These debates came to a head in the aftermath of a tragic accident in a Phillips Chemical plant in Pasadena, Texas that killed 22 workers and injured another 220 employees. Contract workers were working on the vessel that exploded and caused the accidents.
>
> A study commissioned by Congress and the Occupational Safety and Health Administration (OSHA) found that contract workers [in the petrochemical industry] were more likely to experience accidents and injuries in large part because they were less experienced and less well trained than regular employees. Moreover, case-study evidence indicated that many plant managers were aware of the risks associated with increased use of contract workers. These managers, however, were strongly advised to not extend their well-developed safety training and supervisory oversight models to contract workers lest they violate the co-employment doctrine and make their firm liable for the full range of responsibilities (coverage under OSHA [safety], NLRA [worker representation], ERISA [pensions]). Thus, while these oil and chemical companies arguably have some of the most comprehensive and sophisticated safety and health programs in the world, managers were constrained from applying them to the growing subset of workers who were doing some of the most dangerous tasks in their plants. (p. 21)

This study highlights not only the distortions introduced by legal concerns about the co-employment doctrine but also the complex relations that can emerge between regular employees and contractors, working side by side and yet separated by employment status, administrative/political, and cultural distance—in this case, with tragic consequences. Proximity in this situation was not enough to produce either shared understanding or shared identity; instead, it is likely that there was considerable hostility between regular employees and contractors. Not only was the training absent, but the conversations that should have taken place in order to prevent accidents when dealing with dangerous conditions never happened.

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Ample evidence can still be found that these problems of distance between regular and contract employees, working side by side, can have catastrophic consequences. The 2005 explosion at a British Petroleum refinery in Texas killed 15 people, all contractors, under conditions similar to those identified in Kochan and colleagues (1994). According to the *Houston Chronicle* (Olsen, 2005),

> Increasingly, the accuracy of government safety statistics is undermined by the changing work force. These days, up to half of refinery workers are contractors, who generally get some of the most dangerous jobs. …. The way the U.S. safety statistics are kept, a work site will not generally get a black mark if contractors from other companies are killed or injured there—only if a permanent employee dies or gets hurt. Even though it is contract workers who are often injured or killed, refinery employees are often intimately involved in creating or monitoring working conditions…. If the usual guidelines are followed, none of the 15 people who lost their lives in the refinery fire in Texas City—one of the worst refinery accidents in decades—would be counted as refinery deaths since none worked directly for BP, the refinery owner. (p. A1)

This is not a situation in which regular employees were treated substantially better than contractors. According to the report released by a panel of experts headed by former Secretary of State James A. Baker III,

> BP's training of its workers—who operate and oversee some of the most dangerous equipment in the country—falls short of providing them with the expertise they need to safely do their jobs. (Belli, 2007, p. A1)

Tensions and communications breakdowns between regular and contract employees have also been implicated in aviation safety problems, as in the accidents due to inadequate maintenance that shut down Valu-Jet. Rousseau and Libuser (1997) identified two primary ways in which employment status distance can be dangerous in high-risk environments. First, the contingent workers themselves tend to be younger, less experienced, and less well-trained, unfamiliar with both the technical and social systems that underlie task performance in a particular context. Second, organizations often substitute contingent workers for core workers while both maintaining the same organizational structure (without new mechanisms of oversight) and applying HR policies in differentiated fashion to the two groups of workers (contingent workers excluded from practices designed for core workers).

Independent contractors in the IT industry. The rise of itinerant IT professionals working as contractors, documented in Barley and Kunda (2004), poses several policy questions. Contingent employment status in the United States is overwhelmingly characterized by difficulty in obtaining benefits equivalent to those available to full-time employees. This is particularly true with regard

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to low-skilled temporary workers; data from the Current Population Survey shows that they are much less likely to have either health insurance or pension coverage (Hipple & Stewart, 1996). Barley and Kunda reported that the IT contractors they studied could sometimes obtain health insurance through a spouse, but rarely had any structured means of saving for retirement, whether through a pension plan, a 401k offered through an agency, or individual IRAs, Keogh, and SEP-IRA accounts. While contract agencies do sometimes offer participation in benefit plans to attract contractors, they typically impose a minimum period of working for the agency in order to qualify that is longer than the typical project. Since most contractors do not work continuously with one agency, they often do not qualify.

In the United States, the role of staffing agencies—even for skilled professionals doing repeated engagements with clients they know—has grown tremendously in recent years. Client firms increasingly prefer that contractors have such agencies as an "employer of record." Firms do not want to be held accountable, under the co-employment doctrine, for providing benefits and training to contractors; they also want to avoid IRS scrutiny on whether they are evading payroll taxes by hiring contractors. Given that firms are more reluctant to hire contractors directly and that contractors face high costs if they want to incorporate (so their contracting business can be treated legally as a firm), staffing agencies have a great deal of leverage to demand high fees and markups from both clients and contractors. Hence, the current legal and regulatory environment privileges staffing agencies and disadvantages contractors (Barley & Kunda, 2005).

In contrast, I will now provide two international examples involving challenges for multinational firms in managing their "extended enterprise" across geographical and/or administrative/political boundaries: first, "supplier parks" in the global automotive industry, and second, working conditions at developing country factories in the footwear industry.

Supplier parks in the automotive industry. An interesting variant on the combination of geographical proximity with employment status distance can be found in the rise of supplier parks or "industrial consortium" models of collocated production in the auto industry. In these settings, regular employees of an automaker work in close proximity with regular employees of multiple suppliers, either in separate buildings on the same physical site or at the extreme, side by side on a final assembly line, with each supplier adding their own component and the automaker overseeing quality assurance.

Among these individuals, equity comparisons on wages, benefits, and working conditions happen readily. In some cases, the automaker with administrative responsibility for this clustered production site has found it necessary to impose a single set of employment policies for the site in order to avoid the negative consequences of unfavorable comparisons that lead to worker

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discontent. This has usually taken the form of moving to the greatest—rather than the lowest—common denominator, with supplier employees receiving the same wages and benefits as automaker employees (Sako, 2004). At times, governments—which are often asked to subsidize the creation of these sites—require common conditions for all employees vis-à-vis access to training, and so forth. Here, geographical proximity creates pressure for minimizing employment status and administrative distance in relation to employment policies.

Working conditions in footwear factories. A very different employment policy issue concerns the responsibilities of a firm that has distributed work to suppliers in other countries for the labor standards experienced by the employees of those suppliers. As more and more firms subcontract their manufacturing to low-cost suppliers, concerns about the exploitative conditions that may lie behind the production of high-margin branded products have caught the attention of nongovernmental organizations (NGOs) and, increasingly, the public. There is no clear regulatory jurisdiction over this issue, although countries that are signatories to certain United Nations declarations and International Labor Organization (ILO) covenants have ostensibly made some commitment to minimal labor standards.

Nevertheless, some multinational corporations (MNCs), such as Nike, stung by the negative effects of publicity about sweatshop factories making their products, have established labor codes of conduct for their suppliers, and then either worked with NGO watchdog groups, or directly established their own staff to monitor supplier compliance with these codes (Locke & Ramis, 2007). The effectiveness of these monitoring activities is still unclear; however, some recent research suggests that when MNCs involve their suppliers in programs to improve quality and productivity through the application of new operations processes and human resource methods, labor conditions improve more quickly than with monitoring alone (Locke, Qin, & Brause, 2006). This occurs, arguably, because the high level of interaction between MNCs and suppliers on these operational issues replaces a low-trust environment of monitoring and compliance with richer forms of communication to achieve mutually beneficial goals, while highlighting the importance of how workers are managed to achieving those goals. Furthermore, this interaction is well-designed to build both shared understanding and shared identity.

Summary. The multiplicity of new employment arrangements associated with distributed work makes it imperative to reexamine employment policies based on old assumptions about a primary breadwinner working at a single employer throughout a long career. The United States and other advanced economies will need new policies supporting work engagements of shorter duration, across multiple employers/clients, and involving different kinds of employment status that do not neglect the important social benefits provided

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to individuals and their families—and hence, to the stability of communities and societies—associated with the old model.

Looking Ahead: The Research Agenda for Managing People Over Multiple Types of Distance

What Is Missing/Lacking in the Current Literature

The most fundamental critique that this chapter makes of the existing research on distributed work is that it does not explicitly take into account multiple types of distance. This is primarily by design, in order to focus on one type of distance and to facilitate operationalization of variables. Clearly, many researchers are aware of the phenomenon; this quote from Metiu (2006) is representative: "In distributed work, geographical distance and social distance can reinforce each other, with negative consequences for intergroup cooperation" (p. 420).

Researchers studying conflict in virtual teams are particularly aware of the consequences of diversity of team membership along multiple dimensions—that is, national and organizational cultural differences as well as ascriptive characteristics of gender, race, or age (e.g., Mannix et al., 2002). Researchers of nonstandard work do explore issues of employment status distance between regular employees and contingent workers, although they tend to frame this issue more in terms of conflict and the consequences for organizational commitment, citizenship behaviors, propensity to turnover (e.g., George, 2003). The consequences of distance, however, in any of these dimensions, are both cognitive and affective; distance makes it difficult to attain both shared understanding (of task, context, where knowledge resides) and shared identity (which, in turn, affects motivation, commitment, and discretionary effort). It is critical, in my view, to develop a twinned cognitive and affective focus for the consequences of distance and the adaptations, remedies, and strategies for countering distance.

Greater attention to the coinciding and overlapping of multiple forms of distance is also needed. I would argue that the CAGE typology and "distance inventory" mechanism can be helpful to researchers attempting to understand these new phenomena. Important issues will have to be addressed for these to have value in empirical research, for example, how to reliably measure these different types of distance, how to define them distinctly in a way that will have traction across diverse settings, and how they interact with each other. The concept of administrative distance—my adaptation of Ghemawat's administrative/political distance in the context of a country-level analysis—seems particularly complicated to more precisely define, as well as operationalize, but it responds directly to the important phenomenon of organizational disaggregation that has spawned a huge array of new interorganizational work arrangements. None of the other types quite pick up what administrative distance does—namely, the consequences of having to carry out distributed

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work across many layers of administrative systems and multiple organizational boundaries.

Implicit in the discussion of adaptations, remedies, and countervailing strategies is the idea that dealing effectively with one type of distance (either through minimizing it or through increasing capacity for dealing with it) can *compensate* for the negative effects of other types of distance. This idea needs considerable development, both conceptually and in terms of measurement issues. To what extent (and in what situations) does a given remedy help in dealing with multiple types of distance simultaneously, and to what extent are there tradeoffs? Framing issues of distance in this way may allow for contingent hypothesizing that comes closer to addressing the variegated and ever-evolving phenomena of distributed work.

In terms of research design, it is imperative that more studies be done that directly compare two situations that vary with respect to distance, but otherwise share a context (e.g., task or organization). It is striking how many studies of virtual teams compare differences within a sample of such teams, but do not make any comparison to collocated teams. In such a design, it is easy to exaggerate the effects of distance (in this case, geographical distance). By now, there is ample evidence that virtual teams can be understood within the set of constructs and theories developed for face-to-face groups, so designs that allow comparison along the dimension of distance are critical to advance research on distributed work. Methodologically, research designs that allow for tests of moderating or mediating effects are important, particularly in light of the emphasis here on both distance-minimizing and capacity-enhancing ways of dealing with distance. The series of studies by Hinds and Mortensen (2002, 2005) are exemplary illustrations of such an approach.

A final suggestion on dealing with the complexity of multiple forms of distance is to frame the issue differently. Given the reality of work distributed across multiple forms of distance, what does it take to create the conditions for individuals and groups to interact effectively? Put differently, if we imagine these interactions as "conversations," how can managers make sure that good conversations happen, among the right mix of the right people at the right time, in order to accomplish knowledge-intensive collaborative tasks?

A growing body of research focuses on managerial work as conversations, which can be a resource for creative new approaches to studying distance. I would particularly recommend Lester and Piore (2004) on the role of conversations in innovation; Hardy, Lawrence, and Grant (2005) on how shared identity emerges from conversations to facilitate interorganizational collaborations; Quinn and Dutton (2005) on coordination as "energy-in-conversation," with their emphasis on the emotional and affective—as well as cognitive—components of coordinating distributed work; Gratton and Ghoshal (2002) on creating higher quality conversations, in which people can learn something new about themselves or others, or arrive at creative solutions to problems; Helper,

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MacDuffie, and Sabel (2000) on "pragmatic collaboration" in supplier relations in the global automotive industry, with in its emphasis on how conversations leading to effective collaboration can take place even in the absence of preexisting trust or shared norms and values; and Kellogg, Orlikowski, and Yates' (2006) ethnographic study highlighting the role of a "trading zone" (see also Galison, 1997) in facilitating coordination of ideas and actions.

Promising Questions and High-Priority Issues for Further Study

This chapter hopes to leave the reader more aware of what we do know about managing people over distance, as well as what we do not know. We know a lot about the beneficial effects of proximity for small group process, but we do not have a good way to think about the difficulties that arise when other forms of distance (e.g., cultural, employment status) exist among collocated individuals. We know a lot about what is more difficult for virtual teams than for face-to-face teams, but not as much about how virtual teams may adapt and innovate over time in response to these difficulties, both by finding ways to minimize distance and ways to increase their capacity to handle distance. We know that the different kinds of distance often coexist in a given situation, but not as much about how they interact, whether particular clusters of distance characteristics have distinctive consequences, or the extent to which minimizing one type of distance may compensate for the continued presence of other types of distance.

Certain themes recur in this examination of distributed work. Having a shared experience (e.g., training, looking at a design, creating a shared database) can build both shared understanding and shared identity among those working on a distributed task. Certain social cues are lost when virtual teams do their work, but in their absence, other social dimensions of the group process—including identification with the team—can intensify. Trust and shared values can provide an important foundation for meaningful conversations that bridge various types of distance, yet it is possible to create a context, ground rules, and a set of interdependent task processes that allow trust to emerge and strengthen over time, even where it does not exist in advance.

When it comes to HR policies, much of what we know about selection, training, compensation, and performance management seems to be applicable to distributed work once we correctly identify characteristics of the task being carried out. Complex interdependent tasks are difficult for virtual teams, yet these are the tasks that we most often need such teams to perform. In addition, working together on such tasks helps team members develop shared understanding and shared identity more rapidly than easily separable tasks. Employment policies are still primarily keyed to long-term relationships between a single firm and a full-time employee, yet they are rendered irrelevant at best and dysfunctional at worst by the bewildering range of new ways of organizing work. These new forms are short-term and project-focused,

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involve multiple firms, and combine contractors (independent and brokered) and employees (full-time and part-time, new and high-seniority) in countless permutations.

Clearly, the issues discussed here reach well beyond the scope of the HR function, as it is usually conceived. Managers can take a variety of steps to deal effectively with different types of distance, many of which could not easily be delegated to HR or incorporated into ongoing HR processes. Among these are the following:

1. During selection, when facing heterogeneity on some dimensions (e.g., national origin, company affiliation, demographic characteristics), look for similarity on other attributes (e.g., education, occupational identity, hobbies).
2. In the face of geographical distance, arrange for members of a virtual team to share certain experiences (e.g., combined training; learning collaborator-specific routines and preferences; simultaneous scrutiny of a digitalized design).
3. Over a multistage project, make careful choices about when to apply the power of proximity (e.g., intensive face-to-face interaction, not only at the start but when shared understanding and shared identity are sufficiently well-developed and task interdependence is at its highest point).
4. Choose to maintain an ongoing—if episodic—work relationship with nonstandard workers (rather than accepting high churn in order to minimize costs), to maintain access to their knowledge and to preserve their working relationships with other key full-time employees.

All of these situations require managerial judgment, attentiveness to the dynamics of distributed work, and awareness of the implications of different types of distance.

Thinking imaginatively about distance also requires creativity and a willingness to embrace the apparent paradoxes of distributed work—to make sense of situations where these familiar statements about distance can all be true: "so near, yet so far," "out of sight, out of mind, and "absence makes the heart grow fonder." The world is generating new distance-related phenomena for us to study with each passing day. We have rich traditions of research, ample theories, a versatile array of methods, and an ever-deeper appreciation of the adaptive capacities of individuals, groups, and organizations, all of which we can draw upon for this important endeavor. We had better get going if we hope to keep up!

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Endnotes

1. Some studies attempt global assessments of these impacts (e.g., the McKinsey Global Institute study; Farrell et al., 2006), while others take a domestic focus (e.g., forthcoming National Academy of Sciences and National Academy of Engineering studies of the impact of offshoring on both the United States economy's innovation capability and labor market and career prospects for U.S. engineers).
2. *Transnational* is Bartlett and Ghoshal's (1998) terminology for an approach to structuring a global company—moving beyond "multidomestic" and "multinational" approaches—that combines legal consolidation and geographical dispersion.
3. For a more extended treatment of the research issues surrounding nonstandard work, see Ashford, George, and Blatt, chapter 2, in this volume.
4. Kiesler and Cummings (2002) opened their review with an intriguing historical observation. In the early days of group dynamics research pioneered by Kurt Lewin and his colleagues, social psychologists were deeply immersed in understanding the microdynamics of interaction in small, collocated, face-to-face groups. "A social psychologist in the 1960s, when speaking of proximity, might be talking about the seating arrangements at a table of diners, among a jury, or a committee" (p. 58). From this starting point, it was natural to devote a great deal of research attention to the role of proximity in small groups.
5. That such a threshold effect exists means that the effects of geographical distance do not increase monotonically, as we might assume. In terms of spontaneous communication and unplanned interaction, the other side of the city (or campus) can be as far away as halfway around the world—although the potential for planned/intentional face-to-face interaction is obviously more directly related to physical distance.
6. This literature predicted that videoconferencing would provide a richer medium for dealing with geographical distance by providing both visual and verbal cues, albeit accompanied by nuance-defeating side effects such as delay, fuzzy resolution, limited visual scope, and so forth. Subsequent research, however, has found videoconferencing to have disappointing and, at times, negative effects, even as the technology has improved. Indeed, this research shows that teleconferencing phone calls—once all participants recognize each other's voices—can be more effective at communicating nuances of meaning and emotion than videoconferencing. Whether Internet 2-powered videoconferencing (the new buzzword is "telepresence") can achieve more nuanced communication among distributed work groups remains to be seen.
7. I will focus primarily on what is possible in this "best-case scenario" for virtual teams, in terms of problems and related adaptations/remedies for those problems. At the same time, it should be acknowledged that many individuals may experience virtual teams as short-term and unstable, may not be aware of who is and is not a member (Mortensen & Hinds, 2002), and could even be members of multiple virtual teams (as well as collocated teams) at the same time, each making competing demands. The problems of virtual teams reported here are certainly going to be much exacerbated under such volatile conditions—but collocated teams might also suffer under these conditions.

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8. Virtual teams are still a relatively new phenomenon and some of these problems could be regarded as those of an immature organizational form. Armstrong and Cole (1995) provided an early in-depth study of virtual teams that revealed a staggering number of problems. In an addendum to a reprint of this study, Armstrong and Cole (2002) stated that "most distributed groups do not attain the ideal of being a real team: a work group with a stable and defined membership that has established a shared working process in the pursuit of a common goal that they can only achieve together (Hackman et al., 2000)" (p. 189). At the same time, "we have been impressed with the qualities of those distributed groups that *have* become real teams…, modest in size and stable over time so the members get to know each other and establish a track record" (p. 189). Similarly, many of the "lack of social context" findings from the early research on e-mail (e.g., Constant, Sproull, & Kiesler, 1986)—for example, the high incidence of uninhibited "flaming"—seem to be moderated in today's e-mail usage, given the developments of norms for e-mail that are either reinforced by ongoing personal relationships or enforced by institutionally established means (from Web site monitors to automated filters).
9. Given that organizations often determine or influence the location where an employee works, Reskin's (2003) argument may also help explain why individual self-identification tied to site/location is so powerful and often competes successfully with virtual team membership to influence an individual's sense of shared identity.
10. Parallel teams carry out part-time activities involving specific problem-solving activities, such as quality circles or suggestion teams, whereas management teams are collectively responsible for supervising particular activities or people; both rarely appear as virtual teams.

References

Abraham, K. G., & Taylor, S. K. (1996). Firms' use of outside contractors: Theory and evidence. *Journal of Labor Economics, 14,* 394–434.

Allen, T. (1977). *Managing the flow of technology*. Cambridge, MA: MIT Press.

Applebaum, E., & Batt, R. (1994). *Transforming work systems in the United States*. Ithaca, NY: ILR Press.

Armstrong, D. J., & Cole, P. (1995). Managing distances and differences in geographically distributed work groups. In S. E. Jackson, & M. N. Ruderman (Eds.), *Diversity in work teams: Research paradigms for a changing workplace* (pp. 187–215). Washington, DC: American Psychological Association.

Armstrong, D. J., & Cole, P. (2002). Managing distances and differences in geographically distributed work groups. In P. Hinds, & S. Kiesler (Eds.), *Distributed work* (pp. 167–186). Cambridge, MA: MIT Press.

Arthur, J. B. (1992). The link between business strategy and industrial relations systems in American steel minimills. *Industrial and Labor Relations Review, 45,* 488–506.

Arthur, M. B., & Rousseau, D. M. (Eds.). (2001). *The boundaryless career: A new employment principle for a new organizational era*. New York: Oxford University Press.

Downloaded By: [Academy of Management] At: 19:18 28 April 2008

Ashford, S. J., George, E., & Blatt, R. (2007). Old assumptions, new work: The opportunities and challenges of research on nonstandard employment. In J. P. Walsh, & A. Brief (Eds.), *Annals of the Academy of Management* (Vol. 1, pp. 65–118). New York: LEA.

Autor, D. H. (2001). Why do temporary help firms provide free general skills training? *Quarterly Journal of Economics, 116,* 1409–1449.

Axtell, C. M., Fleck, S. J., & Turner, N. (2004). Virtual teams: Collaborating across distance. In C. L. Cooper, & I. T. Robertson (Eds.), *International review of industrial and organizational psychology* (Vol. 19, pp. 205–248). Chichester, U.K.: Wiley.

Azoulay, P. (2004). Capturing knowledge within and across firm boundaries: Evidence from clinical development. *American Economic Review,* 94, 1591–1612.

Bailey, D. E., & Kurland, N. B. (2002). A review of telework research: Findings, new directions, and lessons for the study of modern work. *Journal of Organizational Behavior, 23,* 383–400.

Baltes, B. B., Dickson, M. W., Sherman, M. P., Bauer, C. C., & LaGanke, J. S. (2002). Computer-mediated communication and group decision making: A meta-analysis. *Organizational Behavior and Human Decision Processes, 87,* 156–179.

Barley, S. R., & Kunda, G. (2001). Bringing work back in. *Organization Science, 12,* 76–95.

Barley, S. R., & Kunda, G. (2004). *Gurus, hired guns, and warm bodies: Itinerant experts in a knowledge economy*. Princeton, NJ: Princeton University Press.

Barley, S. R., & Kunda, G. (2006). Contracting: A new form of professional practice. *Academy of Management Perspective*, *19,* 1–19.

Barrick, M. R., Stewart, G. L., Neubert, M. J., & Mount, M. K. (1998). Relating member ability and personality to work-team processes and team effectiveness. *Journal of Applied Psychology, 83,* 377–391.

Bartlett, C. A., & Ghoshal, S. (1998). *Managing across borders: The transnational solution*. (2nd ed.) Boston: Harvard Business School Press.

Batt, R. (1999). Work organization, technology, and performance in customer service and sales. *Industrial and Labor Relations Review, 52,* 539–564.

Batt, R. (2002). Managing customer services: Human resource practices, quit rates, and sales growth. *Academy of Management Journal, 45,* 587–597.

Befort, R. S. (2003). Revisiting the black hole of workplace regulation: A historical and comparative perspective of contingent work. *Berkeley Journal of Employment and Labor Law, 24,* 153–179.

Belli, A. (2007, January, 21). BP workers ill-trained for dangers, report says: Baker panel criticizes lack of hands-on exercises. *Houston Chronicle*, p. A1.

Bhappu, A., Griffith, T. L., & Northcraft, G. B. (1997). Media effects and communication bias in diverse groups. *Organizational Behavior and Human Decision Processes, 70,* 199–205.

Bidwell, M. (2006a). *Do peripheral workers do peripheral work? A test of internal labor market theory using information technology consultants*. Fontainebleau, France: INSEAD.

Bidwell, M. (2006b). *Reworking contingent employment*. Fontainebleau, France: INSEAD.

Downloaded By: [Academy of Management] At: 19:18 28 April 2008

Blackburn, R., Furst, S., & Rosen, B. (2003). Building a winning virtual team. KSAs, selection, training, and evaluation. In C. B. Gibson, & S. G. Cohen (Eds.), *Virtual teams that work: Creating conditions for virtual team effectiveness* (pp. 95–120). San Francisco: Jossey-Bass.

Blinder, A. S. (2006). Offshoring: The next industrial revolution. *Foreign Affairs, 85,* 113.

Bradley, M., Schipani, C. A., Sundaram, A. K., & Walsh, J. P. (1999). The purposes and accountability of the corporation in contemporary society: Corporate governance at a crossroads. *Law Contemporary Problems, 62,* 9–85.

Brewer, M. B., & Miller, N. (1996). *Intergroup relations*. Buckingham, U.K.: Open University Press.

Broschak, J. P., & Davis-Blake, A. (2006). Mixing standard work and nonstandard deals: The consequences of heterogeneity in employment arrangements. *Academy of Management Journal, 49,* 371–393.

Burton, D., Bidwell, M., Fernandez-Mateo, I., & Kochan, T. A. (2004). *HRM challenges for managing varied employment relationships: IT employees, independent contractors, and consultants*. Cambridge, MA: MIT Institute of Work and Employment Relations.

Cappelli, P. (1999). *The new deal at work: Managing the market-driven workforce*. Boston: Harvard Business School Press.

Cappelli, P., & Neumark, D. (2001). Do "high performance" work practices improve establishment-level outcomes? *Industrial and Labor Relations Review, 54,* 737–775.

Carlson, J. R., & Zmud, R. W. (1999). Channel expansion theory and the experiential nature of media richness perceptions. *Academy of Management Journal, 42,* 153–170.

Child, J. (2001). Trust—the fundamental bond in global collaboration. *Organizational Dynamics, 29,* 274–288.

Constant, D., Sproull, L., & Kiesler, S. (1996). The kindness of strangers: On the usefulness of weak ties for technical advice. *Organization Science, 7,* 119–135.

Cramton, C. D. (2001). The mutual knowledge problem and its consequences for dispersed collaboration. *Organization Science, 12,* 346–371.

Cramton, C. D. (2002). Finding common ground in dispersed collaboration. *Organizational Dynamics, 30,* 356–367.

Culnan, M. J., & Markus, L. M. (1987). Information technologies. In F. M. Jablin, L. L. Putnam, K. H. Roberts, & L. W. Porter (Eds.), *Handbook of organizational communication: An interdisciplinary perspective* (pp. 420–443). London: Sage.

Daft, R., and Lengel, R. (1986). Organizational information requirements, media richness, and structural design. *Management Science, 32,* 554–571.

Davis-Blake, A., Broschak, J. P., & George, E. (2003). Happy together? How using nonstandard workers affects exit, voice, and loyalty among standard employees. *Academy of Management Journal, 46,* 475–485.

De Dreu, C. K. W., & Weingart, L. R. (2003). Task versus relationship conflict and team effectiveness: A meta analysis. *Journal of Applied Psychology, 88,* 741–749.

Delery, J. E., & Doty, D. H. (1996). Modes of theorizing in strategic human resource management: Tests of universalistic, contingency, and configurational performance predictions. *Academy of Management Journal, 39,* 802–835.

Downloaded By: [Academy of Management] At: 19:18 28 April 2008

de Lisser, E. (1999, October 5). Update on small business: Firms with virtual environments appeal to workers. *Wall Street Journal*, B2.

Dennis, A. R., & Valacich, J. S. (1993). Computer brainstorms: More heads are better than one. *Journal of Applied Psychology, 4,* 531–537.

DiMaggio, P. (2001). *The twenty-first century firm: Changing economic organization in international perspective*. Princeton, NJ: Princeton University Press.

Dossani, R., & Kenney, M. (2006). Reflections upon "sizing the emerging global labor market." *Academy of Management Perspectives, 20,* 35–41.

Dougherty, D. (1992). Interpretive barriers to successful product innovation in large firms. *Organization Science, 13,* 77–92.

Eppinger, S. D. (2001). Innovation at the speed of information. *Harvard Business Review, 79,* 149–158.

Farrell, D., Laboissiere, M. A., & Rosenfeld, J. (2006, November). Sizing the emerging global labor market: Rational behavior from both companies and countries can help it work more efficiently. *Academy of Management Perspectives*, 23–34.

Fixson, S. (2005). Product architecture assessment: A tool to link product, process, and supply chain design decisions. *Journal of Operations Management, 23,* 345–369.

Forsyth, D. (1998). *Group dynamics*. Pacific Grove, CA: Brooks/Cole.

Freedman, J. L. (1975). *Crowding and behavior*. San Francisco: Freeman.

Friedman, T. L. (2005). *The world is flat*. New York: Farrar, Straus, and Giroux.

Galison, P. (1997). *Image and logic: A material culture of microphysics*. Chicago: University of Chicago Press.

Geary, J. F. (1992). Employment flexibility and human resource management: The case of three American electronics plants. *Work, Employment and Society, 7,* 213–225.

George, E. (2003). External solutions and internal problems: The effects of employment externalization on internal workers' attitudes. *Organization Science, 14,* 386–402.

George, E., & Chattopadhyay, P. (2005). One foot in each camp: The dual identification of contract workers. *Administrative Science Quarterly, 50,* 68–99.

Ghemawat, P. (2001, September). Distance still matters: The hard reality of global expansion. *Harvard Business Review*, 1–10.

Gibson, C. B., & Cohen, S. G. (Eds.). (2003). *Virtual teams that work: Creating conditions for virtual team effectiveness*. San Francisco: Jossey-Bass.

Gratton, L., & Ghoshal, S. (2002). Improving the quality of conversations. *Organizational Dynamics, 31,* 209–223.

Griffith, T. L., & Neale, M. A. (2001). Information processing in traditional, hybrid, and virtual teams: From nascent knowledge to transactive memory. In M. A. Neale, E. A. Mannix, and T. L. Griffith (Eds.), *Research in organizational behavior* (Vol. 23, pp. 379–421). Amsterdam: Jai-Elsevier Science.

Hackman, J. R., Wageman, R., Ruddy, T. M., & Ray, C. R. (2000). Team effectiveness in theory and practice. In C. Cooper, & E. A. Locke (Eds.), *Industrial and organizational psychology: Theory and practice* (pp. 109–129). Oxford, U.K.: Blackwell.

Downloaded By: [Academy of Management] At: 19:18 28 April 2008

Handy, C. (1995). Trust and the virtual organization. *Harvard Business Review, 73*, 40–50.

Hansen, M. (1999). The search-transfer problem: The role of weak ties in sharing knowledge across organization subunits. *Administrative Science Quarterly, 44,* 82–111.

Hardy, C., Lawrence, T., & Grant, D. (2005). Discourse and collaboration: The role of conversations and collective identity. *Academy of Management Review, 30,* 58–77.

Harrison, A. E., & McMillan, M. S. (2006). Dispelling some myths about offshoring. *Academy of Management Perspectives, 20,* 6–22.

Heckscher, C., & Adler, P. A. (Eds.). (2006). *The form as collaborative community: Reconstructing trust in the knowledge economy*. Oxford, U.K.: Oxford University Press.

Helper, S., & Khambete, S. (2006). *Off-shoring, interfaces, and collaboration across the supply chain: A case study in automotive product development*. Cleveland, OH: Case Western Reserve University.

Helper, S., MacDuffie, J. P., & Sabel, C. (2000). Pragmatic collaborations: Advancing knowledge while controlling opportunism. *Industrial and Corporate Change, 9*, 443–487.

Hertel, G., Giester, S., & Konradt, U. (2005). Managing virtual teams: A review of current empirical research. *Human Resource Management Review, 15,* 69–95.

Hertel, G., Konradt, U., & Orlikowski, B. (2004). Managing distance by interdependence: Goal setting, task interdependence, and team-based rewards in virtual teams. *European Journal of Work and Organizational Psychology, 13,* 1–28.

Hinds, P., & Bailey, D. (2003). Out of sight, out of sync: Understanding conflict in distributed teams. *Organization Science, 14,* 615–632.

Hinds, P., & Mortensen, M. (2002). *Distributed work*. Cambridge, MA: MIT Press.

Hinds, P., & Mortensen, M. (2005). Understanding conflict in distributed teams: An empirical investigation. *Organization Science, 16,* 290–307.

Hinds, P. J., & Weisband, S. P. (2003). Knowledge sharing and shared understanding in virtual teams. In C. B. Gibson, & S. G. Cohen (Eds.), *Virtual teams that work: Creating conditions for effective virtual teams* (pp. 21–36). San Francisco: Jossey-Bass.

Hipple, S., & Stewart, J. (1996). Earnings and benefits of workers in alternative work arrangements. *Monthly Labor Review, 119*, 46–54.

Hitt, M. A., Ireland, R. D., & Harrison, J. S. (1991). Effects of acquisitions on R&D inputs and outputs. *Academy of Management Journal, 34,* 693–706.

Hogg, M. A. (1992). *The social psychology of group cohesiveness: From attraction to social identity*. New York: New York University Press.

Hollingshead, A. B. (1998). Retrieval processes in transactive memory systems. *Journal of Personality and Social Psychology, 74,* 659–671.

Hollingshead, A. B., Fulk, J., & Monge, P. (2002). Fostering intranet knowledge sharing: An integration of transactive memory and public goods approaches. In P. Hinds, & S. Kiesler (Eds.), *Distributed work* (pp. 335–356). Cambridge, MA: MIT Press.

Downloaded By: [Academy of Management] At: 19:18 28 April 2008

Hollingshead, A., & McGrath, J. (1995). Computer-assisted groups: A critical review of the empirical research. In R. Guzzo, & E. Salas (Eds.), *Team Effectiveness and decision-making in organizations* (pp. 46–78). San Francisco: Jossey-Bass.

Houseman, S. N. (2001). Why employers use flexible staffing arrangements: Evidence from an establishment survey. *Industrial and Labor Relations Review, 55*, 149–170.

Huselid, M. A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal, 38,* 635–672.

Ichniowski, C., Shaw, K., & Prennushi, G. (1997). The effects of human resource management practices on productivity. *American Economic Review, 87*, 291–313.

Jarvenpaa, S. L., & Leidner, D. E. (1999). Communication and trust in global virtual teams. *Organization Science, 10*, 791–815.

Jehn, K. A. (1997). Qualitative analysis of conflict types and dimensions in organizational groups. *Administrative Science Quarterly, 42*, 530–557.

Jehn, K. A., Northcraft, G. B., & Neale, M. A. (1999). Why differences make a difference: A field study of diversity, conflict, and performance in workgroups. *Administrative Sciences Quarterly, 44*, 741–763.

Jones, C. (2004). *Teleworking: The quiet revolution*. Report published by The Gartner Group.

Kalleberg, A. (2000). Nonstandard employment relations: Part-time, temporary, and contract work. *Annual Review of Sociology, 26,* 341–65.

Kalleberg, A. L., Reskin, B., & Hudson, K. (2000). Bad jobs in America: Standard and nonstandard employment relations and job quality in the United States. *American Sociological Review, 65,* 256–278.

Kang, S., Morris, S. S., & Snell, S. A. (2007). Relational archetypes, organizational learning, and value creation: Extending the human resource architecture. *Academy of Management Review, 32*, 236–256.

Kanter, R. M. (1990). The new managerial work. *Harvard Business Review, 67,* 85–92.

Kellogg, K. C., Orlikowski, W. J., & Yates, J. (2006). Life in the trading zone: Structuring coordination across boundaries in postbureaucratic organizations. *Organization Science, 17*, 22–44.

Kiesler, S., & Cummings, J. N. (2002). What do we know about proximity and distance in work groups? A legacy of research. In P. Hinds, & S. Kiesler (Eds.), *Distributed work* (pp. 57–82). Cambridge, MA: MIT Press.

Kirkman, B. L., Rosen, B., Tesluk, P. E., & Gibson, C. B. (2004). The impact of team empowerment on virtual team performance: The moderating role of face-to-face interaction. *Academy of Management Journal, 47,* 175–192.

Kochan, T. A., Smith, M., Wells, J. C., & Rebitzer, J. B. (1994). Human resource strategies and contingent workers: The case of safety and health in the petrochemical industry. *Human Resource Management, 33,* 55–77.

Kogut, B., & Zander, U. (1992). Knowledge of the firm, combinative capabilities, and the replication of technology. *Organization Science, 3,* 383–397.

Downloaded By: [Academy of Management] At: 19:18 28 April 2008

Krauss, R. M., & Fussell, S. R. (1990). Mutual knowledge and communicative effectiveness. In J. Galegher, R. E. Kraut, & C. Egido (Eds.), *Intellectual teamwork: Social and technical bases of collaborative work* (pp. 111–146). Hillsdale, NJ: Erlbaum.

Krauss, R. E., Fussell, S. R., Brennan, S. E., & Siegel, J. (2002). Understanding effects of proximity on collaboration: Implications for technologies to support remote collaborative work. In P. Hinds, & S. Kiesler (Eds.), *Distributed work* (pp. 137–164). Cambridge, MA: MIT Press.

Kraut, R., & Streeter, L. (1995). Coordination in software development. *Communications of the ACM, 38,* 69–81.

Kunda, G., Barley, S. R., & Evans, J. (2002). Why do contractors contract? The experience of highly skilled technical professionals in a contingent labor market. *Industrial & Labor Relations Review, 55*, 234–261.

Lau, D., & Murnighan, K. (1998). Demographic diversity and faultlines: The compositional dynamics of organizational groups. *Academy of Management Review, 23*, 325–240.

Lautsch, B. (2003). The influence of regular work systems on compensation for contingent workers. *Industrial Relations, 42*, 565–588.

Lawler, E. E., III (2003). Pay systems for virtual teams. In C. B. Gibson, & S. G. Cohen (Eds.), *Virtual teams that work: Creating conditions for effective virtual teams* (pp. 121–144). San Francisco: Jossey-Bass.

Lepak, D. P., & Snell, S. A. (1999). The human resource architecture: Toward a theory of human capital allocation and development. *Academy of Management Review, 24*, 31–48.

Lester, R. K., & Piore, M. J. (2004). *Innovation: The missing dimension.* Boston: Harvard University Press.

Liang, D. W., Moreland, R., & Argote, L. (1995). Group versus individual training and group performance: The mediating factor of transactive memory. *Personality and Social Psychology Bulletin, 21*, 384–393.

Locke, R., Qin, F., & Brause, A. (2006). *Does monitoring improve labor standards? Lessons from Nike* (Working Paper No. 4612–06). Cambridge, MA: MIT Sloan School of Management.

Locke, R., & Ramis, M. (2007). Improving work conditions in a global supply chain. *MIT Sloan Management Review, 48*, 54–62.

Maccoby, M. (2006). The self in transition: From bureaucratic to interactive social character. In C. Heckscher, & P. A. Adler (Eds.), *The form as collaborative community: Reconstructing trust in the knowledge economy* (pp. 157–176). Oxford, U.K.: Oxford University Press.

MacDuffie, J. P. (1995). Human resource bundles and manufacturing performance: Organizational logic and flexible production systems in the world auto industry. *Industrial and Labor Relations Review, 48*, 197–221.

MacDuffie, J. P., and Helper, S. (2006). Collaboration in supply chains: With and without trust. In C. Heckscher, & P. A. Adler (Eds.), *The form as collaborative community: Reconstructing trust in the knowledge economy* (pp. 417–466). Oxford, U.K.: Oxford University Press.

Mannix, E. A., Griffith, T., & Neale, M. (2002). The phenomenonology of conflict in distributed work teams. In P. Hinds, & S. Kiesler (Eds.), *Distributed work* (pp. 213–234). Cambridge, MA: MIT Press.

Downloaded By: [Academy of Management] At: 19:18 28 April 2008

Mathieu, J., Goodwin, G. F., Heffner, T. S., Salas, E., & Cannon-Bowers, J. A. (2000). The influence of shared mental models on team process and performance. *Journal of Applied Psychology, 85,* 273–283.

Matusik, S. F., & Hill, C. W. L. (1998). The utilization of contingent work, knowledge creation, and competitive advantage. *Academy of Management Review, 23*, 680–697.

McDonough, E. F., Kahn, K. B., & Griffin, A. (1999). Managing communication in global product development teams. *IEEE Transactions on Engineering Management, 46*, 375–386.

McGrath, J. E. (1984). *Groups: Interaction and performance*. Englewood Cliffs, NJ: Prentice-Hall.

McGrath, J. E., & Hollingshead, A. B. (1994). *Groups interacting with technology: Ideas, evidence, issues, and an agenda*. Thousand Oaks, CA: Sage.

McKnight, D. H., Cummings, L. L., & Chervany, N. L. (1998). Initial trust formation in new organizational relationships. *Academy of Management Review, 23*, 473–490.

Metiu, A. (2006). Owning the code: Status closure in distributed groups. *Organization Science, 17*, 418–436.

Meyerson, D., Weick, K. E., & Kramer, R. M. (1996). Swift trust and temporary groups. In R. M. Kramer, & T. R. Tyler (Eds.), *Trust in organizations: Frontiers of theory and research* (pp. 166–195). Thousand Oaks, CA: Sage.

Moreland, R. L., Argote, L., & Krishnan, R. (1998). Training people to work in groups. In R. S. Tindale et al. (Eds.), *Applications of theory and research on groups to social issues* (pp. 36–60). New York: Plenium.

Morris, J., Cascio, W., & Young, C. (1999, Winter). Downsizing after all these years: Questions and answers about who did it, how many did it, and who benefited from it. *Organizational Dynamics*, 78–87.

Mortensen, M., & Hinds, P. (2001). Conflict and shared identity in geographically distributed teams. *International Journal of Conflict Management, 12,* 212–238.

Mortensen, M., & Hinds, P. (2002). Fuzzy teams: Boundary disagreement in distributed and collocated teams. In P. Hinds, & S. Kiesler (Eds.), *Distributed work* (pp. 283–308). Cambridge, MA: MIT Press.

Neuman, G. A., & Wright, J. (1999). Team effectiveness: Beyond skills and cognitive ability. *Journal of Applied Psychology, 84,* 376–389.

Olsen, L. (2005, May 16). Murky stats mask plant deaths: Government safety figures are misleading on contract workers at U.S. refineries. *Houston Chronicle*, http://www.chron.com/disp/story.mpl/special/05/blast/3183356.html

O'Reilly, C. A., & Pfeffer, J. (2000). *Hidden value: How great companies achieve extraordinary results with ordinary people.* Boston: Harvard University Press.

Osterman, P. (1994). How common is workplace transformation and who adopts it? *Industrial & Labor Relations Review, 47*, 173–188.

Osterman, P. (2000). Work reorganization in an era of restructuring: Trends in diffusion and effects on employee welfare. *Industrial & Labor Relations Review, 53*, 179–196.

Downloaded By: [Academy of Management] At: 19:18 28 April 2008

Owens, D. A. Neale, M. A., & Sutton, R. I. (2000). Technologies of status negotiation: Status dynamics in email discussion groups. In M. A. Neale, E. A. Mannix, & D. H. Gruenfeld (Eds.), *Research on managing groups and teams: Technology* (Vol. 3, pp. 205–230). Stamford, CT: JAI Press.

Pearce, J. L. (1993). Toward an organizational behavior of contract laborers: Their psychological involvement and effects on employee coworkers. *Academy of Management Journal, 36,* 1082–1096.

Pelled, L., Eisenhardt, K., and Xin, K. (1999). Exploring the black box: An analysis of work group diversity, conflict, and performance. *Administrative Science Quarterly, 44*, 1–28.

Pfeffer, J. (1994). *Competitive advantage through people: Unleashing the power of the work force*. Boston: Harvard Business School Press.

Pfeffer, J. (1998). *The human equation: Building profits by putting people first*. Boston: Harvard Business School Press.

Pfeffer, J., & Baron, J. (1988). Taking the workers back out: Recent trends in the structuring of employment. In L. L. Cummings, & B. M. Staw (Eds.), *Research in organizational behavior* (Vol. 10, pp. 257–303). Greenwich, CT: JAI Press.

Pil, F. K., & MacDuffie, J. P. (1996). The adoption of high involvement work practices. *Industrial Relations, 35,* 423–455.

Pinsonneault, A., Barki, H., Gallupe, R. B., & Hoppen, N. (1999). Electronic brainstorming: The illusion of productivity. *Information Systems Research, 10,* 110–133.

Polivka, A. E., Cohany, S. R., & Hipple, S. (2000). Definition, composition, and economic consequences of the nonstandard workforce. In F. Carre et al. (Eds.), *Nonstandard work: The nature and challenges of changing employment arrangements* (pp. 41–94). Champaign, IL: IRRA.

Postmes, T., Spears, R., & Lea, M. (1998). Breachng or building social boundaries? SIDE-effects of computer-mediated communications. *Communication Research, 25*, 689–715.

Postrel, S. (2002). Islands of shared knowledge: Specialization and mutual understanding in problem-solving teams. *Organization Science, 13,* 303–320.

Powell, W. (2001). The capitalist firm in the twenty-first century: Emerging patterns in western enterprise. In P. DiMaggio (Ed.), *The twenty-first century firm: Changing economic organization in international perspective* (pp. 33–68). Princeton, NJ: Princeton University Press.

Prestowitz, C. (2005). *Three billion new capitalists: The great shift of wealth and power to the east*. New York: Basic Books.

Quinn, R. W., & Dutton, J. E. (2005). Coordination as energy-in-conversation. *Academy of Management Review, 30*, 36–57.

Reskin, B. F. (2003). Including mechanisms in our models of ascriptive inequality. *American Sociological Review, 68*, 1–21.

Rousseau, D. M., & Libuser, C. (1997). Contingent workers in high risk environments. *California Management Review, 39*, 103–123.

Downloaded By: [Academy of Management] At: 19:18 28 April 2008

Sako, M. (2004). Modularity and outsourcing: The nature of co-evolution of product architecture and organizational architecture in the global automotive industry. In A. Principe, A. Davies, & M. Hobday (Eds.), *The business of systems integration* (pp. 229–254). Oxford, U.K.: Oxford University Press.

Schilling, M. A. (2000). Towards a general modular systems theory and its application to inter-firm product modularity. *Academy of Management Review, 25,* 312–334.

Shepherd, M. M., Briggs, R. O., Reinig, B. A., Yen, J., & Nunamaker, J. F. (1996). Invoking social comparison to improve electronic brainstorming: Beyond anonymity. *Journal of Management Information Systems, 12,* 155–170.

Smith, V. (1994). Institutionalizing flexibility in a service firm: Multiple contingencies and hidden hierarchies. *Work and Occupations, 21,* 284–307.

Smith, V. (1997). New forms of work organization. *Annual Review of Sociology, 23*, 315–39.

Smith, V. (1998). The fractured world of the temporary worker: Power, participation, and fragmentation in the contemporary workplace. *Social Problems, 45*, 411–430.

Snell, S. A., & Youndt, M. A. (1995). Human resource management and firm performance: Testing a contingency model of executive controls. *Journal of Management, 21,* 711–737.

Sokol, M. B. (1992). A theory of social comparison processes. *Human Relations, 7,* 117–140.

Sole, D., & Edmundson, A. (2002). Situated knowledge and learning in dispersed teams. *British Journal of Management, 13,* S17–S34.

Sosa, M. E., Eppinger, S. D., Pich, M., McKendrick, D. G., & Stout, S. K. (2002). Factors that influence technical communication in distributed product development: An empirical study in the telecommunications industry. *IEEE Transactions on Engineering Management, 49*, 45–58.

Spears, R., & Lea, M. (1992). Social influence and the influence of the 'social' in computer-mediated communication. In L. Martin (Ed.), *Contexts of computer-mediated communication* (pp. 33–65). London: Harvester Wheatsheaf.

Spears, R., & Lea, M. (1994). Panacea or panopticon—The hidden power in computer-mediated communication. *Communication Research*, 427–459.

Sproull, L., & Kiesler, S. (1986). Reducing social-context cues—Electronic mail in organizational communication. *Management Science, 32*(11), 1492–1512.

Stasser, G., & Titus, W. (1985). Pooling of unshared information in group decision making: Biased information sampling during discussion. *Journal of Personality and Social Psychology, 48,* 1467–1478.

Stasser, G., Vaughan, S. I., & Stewart, D. (2000). Pooling unshared information: The benefits of knowing how access to information is distributed among group members. *Organisational Behavior and Human Decision Processes, 82*, 102–116.

Stevens, M. J., & Campion, M. A. (1994). The knowledge, skill, and ability requirements for teamwork: Implications for human resource management. *Journal of Management, 20,* 503–530.

Downloaded By: [Academy of Management] At: 19:18 28 April 2008

Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D., & Whetherell, M. (Eds.). (1987). *Rediscovering the social group: A self-categorization theory*. New York: Basil Blackwell.

Ulrich, K. (1995). The role of product architecture in the manufacturing firm. *Research Policy, 24,* 419–440.

Vaccaro, A., & Veloso, F. (2006). *The virtualization of firms' knowledge creation processes: An empirical investigation*. Pittsburgh, PA: Carnegie Mellon University.

Walsh, J. P., Meyer, A. D., & Schoonhoven, C. B. (2006). A future for organization theory: Living in and living with changing organizations. *Organization Science, 17,* 657–671.

Walther, J. B. (1992). Interpersonal effects in computer-mediated interaction—A relational perspective. *Communication Research, 19,* 52–90.

Walther, J. B. (1996). Computer-mediated communication: Impersonal, interpersonal, and hyperpersonal interaction. *Communication Research, 23,* 3–43.

Walther, J. B. (1997). Group and interpersonal effects in international computer-mediated collaboration. *Human Communication Research, 23,* 342–369.

Walther, J. B. (2002). Time effects in computer-mediated groups: Past, present, and future. In P. Hinds, & S. Kiesler (Eds.), *Distributed work* (pp. 235–258). Cambridge, MA: MIT Press.

Walther, J. B., & D'Addario, K. P. (2001). The impacts of emoticons on message interpretation in computer-mediated communication. *Social Science Computer Review, 19,* 324–347.

Walther, J. B., & Tidwell, L. C. (1995). Nonverbal cues in computer-mediated communication, and the effect of chronemics on relational communication. *Journal of Organizational Computing, 5,* 355–378.

Warkentin, M., & Beranek, P. M. (1999). Training to improve virtual team communication. *Information Systems Journal, 9,* 271–289.

Wegner, D. M. (1987). Transactive memory: A contemporary analysis of the group mind. In B. Mullen, & G. R. Goethals (Eds.), *Theories of group behavior* (pp. 185–208). New York: Springer-Verlag.

Weisband, S. (2002). Maintaining awareness in distributed team collaboration: Implications for leadership and performance. In P. Hinds, & S. Kiesler (Eds.), *Distributed work*. Cambridge, MA: MIT Press.

Wiesenfeld, B. M., Raghuram, S., & Garud, R. (1999). Communication patterns as determinants of organizational identification in a virtual organization. *Organization Science, 10*, 777–790.

Williams, K. Y., & O'Reilly, C. A. I. (1998). Demography and diversity in organizations: A review of 40 years of research. In B. M. Staw, & L. L. Cummings (Eds.), *Research in organizational behavior* (Vol. 20, 77–140). Stamford, CT: JAI Press.

Yang, Y. R., & Hsia, C. J. (2004). Local clustering and organizational governance of trans-border production networks: A case study of Taiwanese IT companies in the greater Suzhou area. *Journal of Geographical Science, 36,* 23–54.

Yoo, Y., Kanawattanachai, P., & Citurs, A. (2002). Forging into the wired wilderness: A case study of a technology-mediated distributed discussion-based class. *Journal of Management Education, 26,* 139–163.

Zheng, J., Bos, N., Olson, J. S., & Olson, G. M. (2001). *Trust without touch: Jump-start trust with social chat*. Paper presented at CHI-01 Conference on Human Factors in Computing Systems. Seattle, WA.

Ziegler, R., Diehl, M., & Zijlstra, G. (2000). Idea production in nominal and virtual groups: Does computer-mediated communication improve group brainstorming? *Group Processes and Intergroup Relations, 3,* 141–158.

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