

Part One



MEETING, MEASURING,
MAPPING, AND
MANAGING VIRTUAL
DISTANCE

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Redefining Distance

Imagine a time traveler from the 1960s instantly transported to 2008. They would see some truly astonishing things going on: people working and collaborating across cities, time zones, and even continents; messages sent to anyone, anywhere, anytime without using the U.S. mail; other people attending meetings virtually from their offices, hotels, or even homes; and the ability to easily keep in touch with coworkers in the oddest places like air terminals, trains, cars, and golf courses. The world of work in the twenty-first century is a very different place than it was 40 years ago, and we don't just mean dressing business casual.

It is technology, of course, that has made all of this possible. Nobody, not even the best science fiction writers, envisioned how the way that we work would change or how rapidly the changes would occur. In some respects, it may seem that we have eliminated distance as an impediment to working effectively. After all, we can instant message our colleague in China while we're both looking at the same PowerPoint slides. Or, even better, we can have face-to-face contact using new high-definition videoconferencing.

But any funeral plans for the "death of distance" are premature. While our technology allows us to communicate in amazing new ways, distance is still an important issue. Most people think of distance as geographic separation, but it

turns out that geographic separation is only part of the distance equation. Distance can have several meanings. It can refer to separation in time, separation between two points in space, or emotional separation. Our research with virtual teams began with the notion that geographic separation created emotional distance between coworkers. We quickly realized, however, that geographic separation was only one and not even the most important element in creating a sense of distance. We coined the term *Virtual Distance* to refer to the psychological distance that results when people interact mainly through electronic media—no matter where those communications originate and end. Virtual Distance can vary depending on many factors, real as well as perceived. We will discuss these in detail in Chapter 2, but first, let's consider why the “death of distance” myth creates a slippery slope that is at best woolly when it comes to understanding human behavior.

LOCATION, LOCATION, LOCATION

In the 1970s, Thomas Allen, a researcher at Massachusetts Institute of Technology (MIT), conducted a study on communication patterns. He visited seven different research-and-development laboratories and asked scientists and engineers to indicate the people they communicated with and how frequently they communicated. Allen then measured the distance between the desks of all of the people in each organization. He found that the probability of communicating with someone became lower as the distance between the desks became higher. Discovering this linear relationship was hardly surprising; what was surprising was that distance mattered only for the first 30 meters. After that, the probability of communication fell to almost zero. This relationship held even after Allen corrected for organizational factors such as group and disciplinary affiliation. In

short, if your coworker was in another building, he might as well have been 3,000 miles away.¹

Of course, you are probably thinking that Allen's work was done before the Internet existed. But as those of us who were working in the 1970s remember, we did have a device called the telephone. So what Allen found cannot be entirely explained away by information and communication technology (ICT), like that used for the Internet, e-mail, instant messaging (IM), or SecondLife and other virtual worlds.

Let's consider a more recent study that looked at how the effects of "perceived distance" influenced the interactions between two people. The first study randomly assigned people to one of two conditions. In the first condition, people were told that they were communicating with a partner who was a few miles away, in the same city. In the second condition, people were told that the partner was in a city 3,000 miles away. The results showed that the perception of distance had a significant effect on the subjects. When subjects thought their partner was far away, they were less likely to cooperate with them, more likely to deceive them, and less likely to be persuaded by them. This was true whether the interaction was via IM or videoconferencing. In reality, the partner was in the next room, so it was simply the cognitive interpretation or feeling of distance that produced these results.² So much for technology bringing about the "death of distance"!

Physical or geographic separation is clearly an important factor in the kinds of relationship that we develop with others. But why does *thinking* that someone is far away change our behavior? One reason is that we expect future interactions and especially face-to-face meetings to be unlikely if someone is 3,000 miles away. If we behave in a disagreeable way, we're not likely to be confronted in person. Therefore, there is less consequence and meaning ascribed to interactions that are not physically near.

A second reason is emotional sensitivity. Consider the following scenario: Imagine you're in a control room monitoring rail traffic. The computerized system allows you to view obstacles on the tracks and to control switches. In a location 100 miles away, you see that one of the trains is approaching the left side of a fork in the track at top speed. On the left side, five rail workers are fixing the track. On the right side, there is only one worker. You must decide whether to switch the train to the right side or leave the train heading toward the five workers.

This is a rather unpleasant moral dilemma, but research shows that most people would throw the switch and save five lives at the cost of one. But now consider a modified version of the scenario: Imagine that you are on a bridge watching a train hurtling toward five workers just over a ridge. If the train doesn't stop, the workers are sure to die. You happen to notice a large man standing precariously on the bridge watching the train. If you sneak up on him, and push him off the bridge, he will fall to his death onto the track. But, because he is so big, he will stop the train. You must decide whether to push him over or allow the five workers to die.

This second dilemma is even more unpleasant, but the consequences of the choices are identical. In this case, research shows that few people would choose to push the big man to his death, even though it would save five lives.

Modified versions of these two scenarios³ have been used to study moral and ethical behavior. In an attempt to understand why people react so differently to these two scenarios, researchers at Princeton University used magnetic resonance imaging (MRI) scans to show that the first scenario activated areas of the brain typically involved in making logical, impersonal decisions, such as choosing a route for a trip. But the second scenario activated an entirely different area of the brain—one that is activated when strong emotions are involved.

We believe that Virtual Distance creates similar differences in the emotional reactions of individuals working together. When Virtual Distance is low, the emotional ties with coworkers are stronger. Low Virtual Distance also means that people are more likely to trust their coworkers and feel committed and motivated to the mission. As we shall see, this doesn't necessarily mean that people need to be collocated in order to reach a state of low Virtual Distance. In fact, some of our data show that two people working in the same building can have high Virtual Distance between them. The greater the Virtual Distance among the members of a team, the more problems—miscommunication, lack of clearly defined roles, even personal and cultural conflicts—the team will experience.

VIRTUAL DISTANCE THOUGHT EXPERIMENT

Think of a friend you have known for a long time but haven't seen in a while because she lives far away. When you do speak with her on the phone or read an e-mail from her, it is as if you just saw her yesterday and are simply picking up where you left off.

That's an example of Low Virtual Distance when geographic separation is high.

Now think of someone you work with, perhaps someone in the same office a couple of cubicles or offices away. You rarely talk to her, and when she needs to talk to you, she sends you an e-mail rather than walking over to your desk. When you are face to face, you can't help feeling a bit uncomfortable—after all, most of your communications have taken place through the computer, and you don't know each other at all.

That's an example of high Virtual Distance when geographic separation is low.



The Virtual Distance thought experiment underscores another important point: Virtual Distance is a phenomenon

that has an influence on everyone who uses ICT to communicate on a regular basis—in business as well as personal affairs. In organizations in particular, Virtual Distance is a state that can have an effect on the entire enterprise ecosystem, from the boardroom to the bench, from customer service to the company's customer's customer. While there are such things as “virtual teams,” which are usually described as a group of people who are geographically separated, sometimes culturally different, and who use a lot of virtual communications, they are not the only subset of corporate resources that could benefit from overcoming Virtual Distance.

Some of us remember the days when most of our interactions were with people in the same building, e-mail did not exist, there was no fax, no voice mail, and most of our communications were synchronous. The U.S. Postal Service still handled a lot of our communications, and we still could use the excuse that the report was “in the mail.”

Of course, all of that has changed, and the changes have come about quickly. E-mail, for example, has been around only about 20 years, mobile phones and handheld devices such as Blackberries only 10 years. At the same time, other changes have been taking place. Increased globalization; increased cultural, organizational, and national diversity; a movement from hierarchical to networked organizational structures; and ever-increasing connectedness are occurring simultaneously.

GLOBALIZATION, DIVERSITY, AND NETWORKS

Here's a description of a company that might sound familiar. It has widely dispersed teams of managers who rarely see one another face to face and communicate mostly

asynchronously. They outsource critical parts of their business to individuals whose language, culture, and values are quite different. This is a pretty good description of most global businesses today, but we're describing a company that began in Great Britain over 300 years ago.

The Hudson's Bay Company is best known today for its Canadian Department Stores, but in the 1700s and 1800s, Hudson's Bay was the premier fur-trading business in the world.⁴ Managers were located in widely distant outposts throughout North America and, because of the distance and geographic dispersion, were given fairly wide latitude and discretion in decision making—an example of what we might term today as *empowerment*.

Outsourcing was also important for Hudson's Bay. All of the furs came from trappers who were Native American peoples in what is now the Northern United States and Canada. Although they didn't have Blackberries, Hudson's Bay employees faced many of the same challenges facing today's managers. Geographic distance, cultural differences, asynchronous communication, coordination, and interdependence of tasks were issues that affected the Virtual Distance between the Hudson's Bay managers.

The example of Hudson's Bay shows that globalization is not a new phenomenon. The Roman Empire was a global institution, or at least for the part of the globe that was known at the time. For centuries, the Empire was able to manage geographically dispersed and culturally distinct social and economic groups quite effectively. The Silk Road during the Mongol Empire is another example. What is new is the pace and pervasiveness of globalization over the past several decades.

Researchers at the Konjunkturforschungsstelle Swiss Institute for Business Cycle Research in Zurich have been carefully tracking the growth of globalization since 1970. They devised an index that combines economic, political, and social indices of globalization into one

Development of globalization across the world

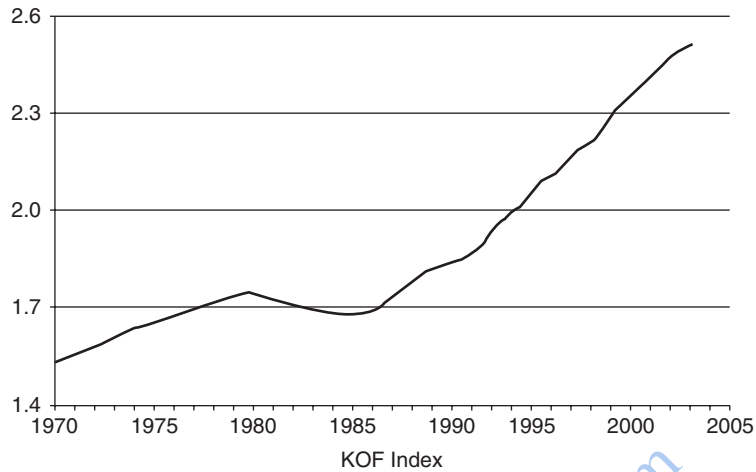


FIGURE 1.1 Growth of Globalization

Konjunkturforschungsstelle index of globalization, which they (thankfully) call the KOF Index. Economic factors include long-distance flows of goods, capital, and services as well as information and perceptions that accompany market exchanges. The social dimension measures the spread of ideas, information, images, and people, while the political dimension captures diffusion of government policies. Figure 1.1 shows the rapid and steady growth of globalization worldwide since 1970.

Technology is clearly one of the most important factors in increased globalization. We can be thousands of miles apart, and we can easily transfer large amounts of data at high speeds, engage in relatively clear communication, and even work on the same document at the same time. But while some things are easy across great distances, other things may not be that easy. We might have to build relationships and work with outsourcers, team members, and employees whom we have never met (and may never meet) face to face.

Working across international boundaries carries additional complications. Coworkers may be from very different

cultures, with different values, communication styles, beliefs, and attitudes. This increase in diversity has some benefits. Understanding local cultures may be important if we're planning to launch a new product, for example, and the different knowledge, skills, and ways of thinking inherent in multicultural teams can be an advantage in developing new approaches to solving business problems. But the same cultural differences can create misunderstanding and conflict.

Consider the following situation between French and American employees working on the same team. The French view information as centrally controlled by a hierarchically managed bureaucracy, which in this case is different from the American belief that information can be shared within empowered and autonomous teams. The French people placed a high level of importance on building long-term relationships with customers, whereas the same was discounted by Americans who viewed this as an impediment to good business practice.⁵

French beliefs notwithstanding, the movement toward flat, decentralized organizational structures has increased over the past decade. Decentralization has some great benefits. Because employees and teams are empowered, they can make decisions more quickly. And speed can be critical for getting new products out, where first to market can be a big competitive advantage.

But decentralization also means that the way we communicate has changed. Instead of having to go through a chain of command, communication can be more direct between people, teams, and organizational units. It also means that informal networked structures have become even more important than they used to be. Networked structures more appropriately describe the relationship between multinational organizational units and their suppliers, for example, but also describe the relationship between people working in those structures. Social Network Analysis (SNA) offers a useful set of tools for describing the relationships between

organizations, subunits and individuals within these networked organizations. As we will discuss later, many SNA concepts have direct implications for Virtual Distance.

THE YIN AND YANG OF WORK

Antonio Damasio is a neuroscientist who has studied how our brains function when we make decisions.⁶ Case studies of brain injuries led Damasio to an interesting conclusion. When we make decisions, our brains do two things: conduct an analysis of the situation and alternatives involved in the decision, and conduct an emotional evaluation of the situation and the options. It turns out that if the connection between the emotional center and the analytic center is interrupted, we can't make a decision. We might be able to conduct a thorough analysis of all of the pros and cons, but without the emotional connection, we simply can't choose.

What does brain functioning have to do with the way we work? Work is nothing more than a series of decisions. Some of these may be highly programmed and may not involve much thought. But most of the more interesting work that we do involves using our brains—both the analytical and the emotional sides—to make decisions. The Chinese concept of yin and yang, used to describe two opposite but complementary forces, nicely describes this dichotomy. Many managers tend to be great at the analysis side, but not so great at connecting to the emotional side of the employees who are doing the work. This dichotomy appeared and reappeared in different guises during the twentieth century in the ideas and theories of social scientists who study work behavior.

One of the most important examples of this dichotomy is the difference between Frederick Winslow Taylor and

Elton Mayo. In 1911, Taylor published *Scientific Management*,⁷ which laid out a new approach to making work more efficient by designing tools and the procedures that could optimize work efficiency. Taylor's view was that the worker using the tools was a rather inefficient, but unfortunately necessary, component of production. His views of the average worker were expressed in his testimony before congress in 1913: "I can say, without the slightest hesitation, that the science of handling pig-iron is so great that the man who is . . . physically able to handle pig-iron and is sufficiently phlegmatic and stupid to choose this for his occupation is rarely able to comprehend the science of handling pig-iron."⁸

Taylor was a mechanical engineer. He invented the field of industrial engineering. Engineers are generally trained to approach problems analytically and find technology-based solutions. While this approach has led to many important advances, it has also persistently ignored the attitudes, values, and emotions of the human beings actually performing the work. In fact, the persistence of this phenomenon was remarkable throughout the twentieth century, even influencing our current work environments.

Of course, Taylor was not alone in his view of the worker. In the 1890s when Taylor started his studies, the standard workweek was about 60 hours over six days,⁹ with no health insurance, pension plans, or overtime. Concerns about the "feelings" of workers were not exactly a priority. But in the 1920s, this bleak view of the worker as another machine began to change.

The signal event actually began as another effort at "Taylorism." Industrial engineers at the Western Electric Company were interested in finding the optimal level of illumination for production workers. They conducted the first few studies at the Hawthorne Works in Cicero, Illinois, in the 1920s. They selected a group of workers and

increased the illumination or lighting in the room. Productivity went up as a result. They increased it some more, and productivity went up again. They then decreased the illumination, and productivity went up even more. Obviously, something more than illumination was causing the changes in productivity. A consultant, Elton Mayo, was brought in to help figure out what was happening.

After looking at the results of the illumination studies, interviewing the workers, and conducting his own research, Mayo concluded that there was an entirely different set of factors involved in the increases in productivity. He found that the interest and sympathy of the supervisor and the attention paid to the workers had impacts on motivation, for example. He also found that when workers were given a bit of autonomy, they were able to see themselves as a team, which increased a sense of control and increased their commitment to the work. Mayo's conclusions may seem rather obvious today, but in the 1920s these views were radical—so radical that U.S. business and industry pretty much ignored the findings.¹⁰

The distinctness between analytical tasks and emotional behavior continued. In 1950, for example, a series of research studies at Ohio State University concluded that the two major factors that distinguished the performance of leaders were initiating structure and consideration. *Initiating structure* is a shorthand term for analysis, planning, and problem solving; in other words the analytical side of work. *Consideration* refers to the leaders' concern for the social and interpersonal side, that is, the emotional side. The Managerial Grid that emerged in the 1960s used a similar concept and rated leaders on concern for productivity and concern for people. Figure 1.2 shows that these two factors emerge consistently in research on leadership, trust, prediction of work performance, job satisfaction, and project performance.

FIGURE 1.2 The Yin and Yang of Organizational Theories

Theory or Research	Analytical (Yin)	Emotional (Yang)
Ohio State Leadership Studies (1950s)	Initiating structure: planning, organizing, problem solving	Consideration: Leaders must consider the social and interpersonal needs of followers
Theory X and Theory Y (1960s)	The manager's job is to structure the work and energize the employee	People are self-motivated by the satisfaction of doing a good job
Managerial Grid (1964)	Concern for production	Concern for people
Full Range Leadership Theory (1980s)	Transactional leadership	Transformational leadership
Project Management Research (1990s–2000)	Budgets, schedules, and milestones	Project spirit, leadership, and behavior
Theories of interpersonal trust (1990s)	Cognitive trust—trust based on rational expectations	Affective trust—trust based on relationships
Prediction of work performance (employee selection research)	Cognitive ability	Personality and emotional/social intelligence
Job satisfaction	Satisfaction derived from work context	Satisfaction derived from peers

VIRTUAL WORK AND VIRTUAL DISTANCE

As we have seen, geographic distribution and globalization of work are not entirely new phenomena, but the Internet, broadband, and other technology, allow us to communicate and work together in ways that were not possible before their combined arrival.

Working virtually creates new challenges for communication, leadership, and teamwork, and like Frederick Taylor, modern managers seek solutions by designing better tools. In this case, the tools might be collaborative design software, high-speed video, or a better conferencing system. But, also like Taylor, most see technology as the solution when it may just be creating another problem.

Our research and experience in consulting with diverse organizations has led us to the conclusion that improving the effectiveness of the virtual workforce does not lie in better technology. As Chuck House, the director of Stanford's Media X lab, says, "The more virtual distance, the less sophisticated the software should be."

So how does a company go about understanding whether Virtual Distance is an issue within their organization? The first thing they need to do is to meet Virtual Distance. This provides an important structure that allows a basis for effectively tackling the myriad and complex issues that arise in virtual teams. The next chapter introduces the reader to the details of the Virtual Distance Model and provides the scaffolding for dealing with its challenges.

SUMMARY

1. The "death of distance" is a myth. The truth is that we continue to grapple with distance-related

problems based on geographic separation as well as emotional separation—just as we have for centuries.

2. Physical distance can create barriers to communication even with technology-enhanced collaboration tools. Here are just a few examples:
 - 30 meters was found to be the physical limit for face-to-face communications in the mid-1950s, when telephones were available to bridge geographic distance.
 - Half a century later, in 2004, studies found that people cooperate less, deceive more, and are less persuaded when just the “perception” of physical distance increases.
 - Ethical choices and emotional attachment are both heavily influenced by physical closeness.
3. Globalization of work and outsourcing are not new concepts, but the extensive use of high-speed information and communication technology have made distance issues more acute in the twenty-first century than ever before—a critical driver for renewing our understanding of how distance plays a role in the context of our new world of work.
4. Emotional as well as analytical or task-related considerations have been competing for space in management theories since the dawn of management science itself. Perceived distance brought on by ubiquitous technologies has a profound and measurable effect on both.
5. *Virtual Distance* is a new term we have coined to describe the distance-related factors that affect us most in the Digital Age. These include, not surprisingly, a combination of geographic as well as social and emotional distances and feelings of separation, which can inhibit collaboration, communication, and success.

NOTES

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