

Technology and Work in the Virtual Organization

Paul M. Leonardi

Stanford University, USA

INTRODUCTION

With the proliferation of industrial manufacturing plants in the United States during the first half of the 20th century, work was traditionally understood not only as something you did to earn a living, but someplace you went. The industrial revolution fundamentally changed the nature of work as it tied the practices of manual laborers to specific technologies such as the assembly line and the printing press, which were located in specific factories, plants, and offices. Today when we talk about work as a place we go rather than a thing we do, our rhetoric is a remnant of an image of manual work that dominated the 20th century.

BACKGROUND

Coinciding with the influx of post-war university enrollments in the '40s and '50s, in the latter half of the 20th century there was an explosion of jobs requiring "knowledge work." This work included computational and analytical functions not tied to a specific workplace technology and that could be performed from anywhere. By the 1970s the combination of widespread knowledge work, high gasoline prices, and new capabilities for data communication spurred a wave of telecommuting. Working from a remote location as one would do in the office allowed people to work at home while still maintaining contact with colleagues and clients (Nilles, 1975). Today, numerous terms are used to describe such work arrangements: "Telework," "distance work," "mobile work," and "virtual work" are among the most common.

The word "virtual" has gained increasing currency as a way of talking about organizational interactions that

occur outside traditional barriers of time and space. In fact, today many organizations describe themselves as virtual organizations. As Dutton (1999) describes, a virtual organization is "composed of private firms or public agencies that have employed information and communication technologies (ICTs) to transform business processes within the organization or among themselves and other organizations" (p. 474). Many organizations that have decided to enable virtual work have been enthusiastic about the possibilities of virtual meetings, work teams, offices, factories, firms, and alliances (Burn & Barnett, 1999; DeSanctis & Monge, 1999). Table 1 summarizes some of the reasons organizations have made it possible for employees to work virtually.

ROLE OF TECHNOLOGY

Digital telecommunications technologies have been the primary enablers of virtual work.

While there is growing evidence that technology does not *drive* virtual work—that is to say, influence people to work virtually (Jackson, Leonardi, & Marsh, 2004; Scott & Timmerman, 1999)—technological infrastructures and applications do make virtual work possible. The earliest modern infrastructural technology was the telephone. Through the use of the telephone, workers could conduct their work individually from remote locations and report back to the office when necessary. Soon, dial-up modems became an efficient way for a virtual worker to log in to the organization's server and access information. Today, residential broadband services provide "always on" connections that enable online access with similar speeds and bandwidth to what workers are used to in traditional workplace offices. Certain applications have also been

Table 1: Some reasons organizations enable virtual work

<u>Employee-Driven</u>	<u>Organizationally Driven</u>
<ul style="list-style-type: none"> • Increased control of schedule • Eliminate/reduce commute • Freedom from interruptions • Less formal work environment 	<ul style="list-style-type: none"> • Decreased maintenance/facility costs • Leverage diverse expertise • Decentralization • Employee health/welfare

key enablers of virtual work. Early database technologies allowed workers who worked remotely to access information collected and stored in computers at the organization. Aside from word processing applications, e-mail is perhaps the most important tool most used by modern virtual workers (Scott & Timmerman, 1999). E-mail allows the virtual worker to send and receive important documents and messages to colleagues and clients. Today we are beginning to see the use of instant messaging (IM) and teleconferencing technologies, with which virtual workers can communicate more efficiently with one another.

Digital telecommunications technologies must perform two important tasks if they are to enable successful virtual work. First, they must allow the worker to establish a telepresence. Steuer describes telepresence as “the experience of presence in an environment by means of a communication medium” (Steuer, 1992, p. 76). Although virtual workers are not physically copresent with their colleagues and clients, they must be able to work with them as if they were. For this reason, when communicating important information those who work with others at a distance often chose to communicate through the electronic medium that most mimics a face-to-face context (Trevino, Daft, & Lengel, 1990). Second, for technologies to effectively enable virtual work they must be transparent to the user. Virtual workers are typically not technological innovators and thus prefer to use technologies that do not interfere with the ways in which they would normally work at the office (Jackson et al., 2004). To the extent that the virtual worker has to think about when and how to use a technology to complete a work task, he or she will prove to be more ineffective. The most valuable technologies are those that the virtual worker does not have to think about when using and that do not interfere with normal work practices.

FUTURE TRENDS: PRACTICE OF VIRTUAL WORK

Work is the fundamental constitutive feature of the organizing process. To organize virtually, organizational mem-

bers work in similar ways as they would in the office, but also in ways specific to their virtual arrangement. Specifically, virtual work makes explicit the task-based and relational aspects of ordinary office work and adds the dimension of presence practices. Table 2 summarizes these virtual work practices.

- **Task-Based Practices:** Work practices related to a specific job description that must be carried out to produce a deliverable product, process, or idea.
- **Relational Practices:** Work practices related to communication with others, including formal and informal interaction.
- **Presence Practices:** Work practices that establish the presence of a worker in the organization as experienced by coworkers and managers.

Task-Based Practices

Although stories persist in the popular and trade presses that the invention of new telecommunications technologies will fundamentally change the way individuals work, research on work in virtual organizations has shown that the task-based work practices of those who work virtually differs little from practices conducted in the office. In fact, knowledge workers who adopt virtual work arrangements must often convince their managers that they will be able to conduct the same work, of the same quality, and at the same speed from a virtual location as they would if they remained working at their workplace office (Leonardi, Jackson, & Marsh, 2004). As a result, virtual workers rarely talk about the practices of their task-based work when discussing their work arrangements, and when they do, they discuss how little has changed from the way they worked in the office. Instead, when reflecting upon their virtual work practices, most virtual workers cite the schedule flexibility, freedom from interruptions, and time saved in commuting as major changes wrought by their virtual work arrangements (Bailey & Kurland, 2002). Task-based work practices change little as a result of a move toward virtual work, but the nature of the task itself does affect the type of technology used to conduct those work practices (Haythornthwaite & Wellman, 1998).

Table 2: Types of virtual work practices

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