TELECOMMUNICATIONS AND THE
CHANGING DEFINITION OF THE WORKPLACE

Margrethe H. Olson

Roberta Tasley

Department of Information Systems
New York University
Leonard N. Stern School of Business
44 West 4th Street
New York, NY 10012-1126

(212) 998-0800

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INTRODUCTION

The introduction of telecommunications and computer technology into the workplace has profound implications for the nature of work itself. In particular, the implementation of "office automation" permits significant changes in the organization and execution of office work. It is possible that the term "office" may take on new meanings. Office automation provides the potential to alter the locational and temporal definitions of large numbers of office jobs.

This paper discusses the phenomenon of "remote office work", which is facilitated by developments in telecommunications and computer technology. The position of the paper is that technology can support either positive or negative implementations of remote office work; social and economic forces, as well as policy, provide the impetus for change in one direction or the other. The general conclusion of this paper is that the profound implications of remote office work are today not understood adequately enough for policy decisions to be made.

This report emphasizes one particular form of remote work, that is, work at home. The reason for this emphasis is that work at home serves as an excellent example of the wide range of potential implications of remote work. Other alternative forms of remote work will be briefly discussed and are reviewed elsewhere (Kraemer, 1982; Nilles et al., 1976). An overview of the forces encouraging remote work will be given. A checklist of policy questions is provided, divided into quality of work life and quality of life issues, economic issues, and political issues.

II. ORIGINS OF THE REMOTE WORK PHENOMENON

The phenomenon of remote work can be viewed as a social, economic, and organizational phenomenon as well as a technological one. The forces contributing to the phenomenon are discussed below.

A. Technological Forces

Much of the interest in work at home in the United States has been motivated by the impression that new technological developments will permit more jobs to be conducted from remote sites; therefore, more people will be able to work at home. The position of this paper is that technology is a facilitator but not the driving force; strong organizational cultural factors help discourage it while individual needs outside of the work domain may encourage it.

It has been predicted that with office automation technology, as many as fifty percent of all office jobs could be performed at or near an employees's home (Harkness, 1977); the location of the jobs is not important and neither is the time when they are performed (within limits, of course). The real point is that more jobs will be portable, able to be performed wherever the necessary computer and communications technology is available. In order for this change to occur, highly integrated office systems need to be implemented; the technology has not yet reached this stage in most if not all United States business organizations. At this time, the technology is not actually a strong facilitator toward work at home.

In the future, when highly integrated office systems exist, the technology may play a more significant role in providing needed flexibility for employees. Probably the most pervasive impact will be "location independence", the general capability to work from dispersed locations and around the clock.

B. Social and Economic Forces

Evidence from the authors' research indicates that the primary motivation of business organizations to investigate the option to work at home is economic. Companies are concerned with the most cost-effective way to acquire skills which are in under-supply. Quality of work life, and the need to give employees flexible work options in order to accommodate their nonwork (e.g, family) needs, do not seem to be major concerns at present. Companies are interested in attracting a labor force that is not accessible under normal circumstances and are willing to decentralize jobs in order to accomplish this. The majority of jobs for which work at home is considered (clerical word processing and computing professionals) are not presently unionized.

Individual employees, on the other hand, are increasingly motivated to pressure their employers to permit more flexible work options, including work at home as well as job sharing, flex time, permanent part time, and extended leaves of absence. Their reasons for needing increased flexibility are clear: increasing numbers of dual career families and single-parent families, the increasing number of mothers of small children who are entering the work force, and the lack of adequate day care facilities in the United States. However, work at home is a relatively extreme, and far from ideal, solution to

working and providing child care at the same time (Olson, 1983).

For some individuals, work at home is an ideal option because of personal preference. Some people prefer the informality and lack of disruptions that work at home provides; others prefer to live in a certain region of the country and refuse to be relocated by a company. So far, however, only those individuals with skills in demand are in a position to request such special arrangements. Underlying these preferences is also often a sense of individual autonomy which is predominant to organizational commitment. Once again, companies are looking for a desired skill and individuals are in a position to provide it; there is little sense of concern for quality of work life or long-term commitment to employees.

C. Organizational Forces

Remote work may be viewed as part of a general organizational trend toward physical decentralization, facilitated by location independence of jobs. Companies in metropolitan areas such as New York City are presently moving their "back office" operations to suburban areas, primarily because of less expensive building costs and an available labor pool. Other companies are moving certain operations to other states for tax purposes or moving certain work such as data entry "off-shore", to other countries where the price of minimally skilled labor is substantially lower. Technology facilitates these moves but the primary motivation is economic.

In the future, companies may become more specialized as well as more physically decentralized, continuing to look for ways to supply themselves with certain specialized skills at reasonable cost.

Technology will continue to facilitate this trend as well as increased flexibility of organizational boundaries. Neighborhood work centers, where technology (terminals and personal computers, teleconferencing facilities, printers, facsimile machines, etc.) is provided for employees from multiple organizations, may become a reality. In the United States, no experiments with neighborhood work centers have occurred to date.

The argument that telecommunications may be utilized to replace transportation and thus save energy may also become a reality. One can envision community structures growing around a common life style or recreational purpose rather than proximity to a central office location (the motivation for the development of suburbia). Such arguments have been made for a number of years (Harkness, 1977; Niles et al., 1976); the realities of organizational cultural resistance to changes in work and management methods may inhibit such large scale changes.

III. A FRAMEWORK FOR UNDERSTANDING THE ORGANIZATION AND CONTROL OF REMOTE WORK

The following model represents a classification of types of work-at-home arrangements that may occur, based on the contractual relationship between the employee and the organization as well as the demand for the employee's skill.

		WORKFORCE SUPPLY	
		SKILL OVERSUPPLY	SKILL UNDERSUPPLY
METHOD OF PAYMENT	CONTRACT/ PIECE RATE	Exploitation	Autonomy
	HOURLY/ SALARY	Tradeoff	Privilege

A. Contract/Piece Rate, Skill Oversupply

The primary individuals in this category are clerical employees whose work can be defined and measured accurately for piece rates. This is the category of workers about whom unions have the most concern. Automated office technology has the capacity to reduce office clerical work to routinized, repetitive tasks, monitored by automatic logging of units produced and error rates. Work at home becomes easier once jobs are organized this way but is less of a contributor to potential exploitation than the technology itself.

In the United States, there is not enough evidence to know the extent of growth of this trend. However, anecdotal evidence indicates a growing industry in transcription typing which employs mothers with young children, working out of their homes supported by a typewriter and paid by the line or the page. Research is required to document the real extent of growth of this form of employment and the effect on those performing the work.

B. Contract/Piece Rate, Skill Undersupply

There is also anecdotal evidence that the number of independent self-employed individuals working out of their homes, including craftspeople, writers, consultants, etc. is growing significantly. One explanation for this trend is the attitudes of those of the "late-sixties generation" who choose not to be members of organizations but to operate autonomously, even if they must sacrifice economic gains to do so (Applegath, 1982). To the extent that these individuals have skills which are in demand, such an arrangement can be practical and even lucrative. As companies increase their own

motivations to purchase specialized skills rather than invest in long-term employee retention, the trend to contract work may grow and become a viable means of economic support for more individuals. Presently, there is no market mechanism for advertising individual skills and the economy discourages it the acquisition of contract work; however, in the future it is expected that more individuals with specialized skills may make an adequate living through contract work without the mixed blessings of organizational membership.

C. Hourly/Salary, Skill Oversupply

Individuals in this category have a permanent relationship to a single organization. Typical cases involve word processors working on an hourly basis, often part-time, and usually receiving no benefits. There is little to differentiate them from the first case except inability to establish an adequate piece rate for the work performed. We prefer to think of this category as qualitatively different in order to make the point that work at home under conditions of oversupply is not exploitative simply because of piece rates and repetitive work. Because of nonwork constraints, primarily family, many potential employees need work options that permit them to bring in essential income and provide necessary family care. Because of woefully inadequate day care in this country, work at home is a less than ideal but feasible option. Therefore, employees view work at home as a tradeoff: it is very difficult but better than not working at all.

D. Hourly/Salary, Skill Undersupply

The group of people in this category represent an ideal situation. The organization gives the employee flexible work options and mechanisms for improving their quality of work life in the interest of long-term retention of their skills. A typical example is a programmer developing highly specialized software for a computer vendor. The employee's skills are highly valued and the work requires little monitoring. Work at home is one of many innovative work options that can demonstrate organizational commitment to retaining employees and to improving their quality of work life. Unfortunately, there are few indications to date that this type of commitment extends much beyond those employees whose skills are unique and in extreme undersupply.

IV. A CHECKLIST OF POLICY ISSUES

In this section, a series of potential effects of remote work, particularly work at home, will be discussed. The observations derive from preliminary research by the authors and others. It will be seen that there are both positive and negative aspects of most of the issues discussed. The discussion is divided into four general areas of concern: quality of work life issues, quality of life issues, economic issues, and political issues. The list is not meant to be comprehensive; the goal is to demonstrate what is not known or understood and to suggest ways of learning more.

A. Quality of Work Life

The identity of an individual as an organizational member may be profoundly affected by remote work arrangements. Furthermore, the division between the work and nonwork domains may become blurred. In the following discussion, issues related to the individual's work role are discussed first.

1. Remote Monitoring

With any remote work arrangement, employees are supervised remotely in the sense that they are not directly observed by their managers. Preliminary evidence indicates increased formalization of the supervisory process when it occurs remotely (Olson, 1982). Invisible electronic monitoring can negatively impact individual motivation and productivity (Zuboff, 1982). On the other hand, cases have been observed where supervisors indicate trust in employees and genuine appreciation of work quality by allowing employees to work remotely.

2. Work Demands and Work Style

The degree to which someone works well and with satisfaction, especially at home, depends on the degree to which the individual has self-control over his or her work. External pacing or severely constrained deadlines, combined with electronic monitoring, provide potential for severe exploitation. Self-control over pacing, particularly with long-term deliverables and well-defined milestones, can result in increased productivity as well as a positive change in the supervisory relationship.

3. Job Satisfaction

Since most definitions of job satisfaction imply identification of a particular workplace, it is possible that traditional definitions of the concept need to be reconsidered.

4. Organizational Commitment

Many of the activities an organization performs to foster commitment are based on face-to-face social interaction and visibility. Remote work, particularly work at home, may foster individual autonomy rather than commitment. This change in relationship prompts the company to purchase a skill rather than invest in long-term employee welfare.

5. Career Path

Those employees who have a skill which is not in over-supply have little or no chance of advancement in the workplace; in a remote work arrangement this is often understood as being a primary reason they can work remotely. For those who would otherwise have a more direct career path, the lack of visibility is a major drawback of remote work. Since many of those working at home are women with primary child care responsibilities, remote work could be construed as a mechanism to discourage women from reaching higher levels of management.

B. Quality of Life Issues

This section discusses issues concerning the blurring of the boundaries between the work and nonwork domains of an individual's life.

1. Social Isolation

Often when people think about whether they would like to work at home, they react that they would feel socially isolated. The authors' research has shown that some individuals view work at home as a choice and would in fact prefer to be removed from the social interaction of the office. Those who felt most socially isolated, however, were those for whom the arrangement to work at home was a tradeoff: it was the only feasible way of working and raising children at the same time (Olson, 1983). It has been suggested that the solution to social isolation is to build neighborhood or community support groups as a substitute; the most commonly-cited reason for encouraging neighborhood work centers is to provide desirable social interaction. Although the authors tend to support this belief, we note that much interaction in an office is not simply "social" but is also highly political and, in some cases, professional. In the long run strong community norms may develop as a substitute for organizational or professional norms (Hedburg and Mehlmann, 1981).

2. Stress

In our preliminary studies, a number of individuals reported increased stress as a result of their work at home arrangement. For the most part, stress was felt by those attempting to work full time and provide primary family care at the same time. Many of those reported that the arrangement was "better than not working" or that it was acceptable under the circumstances. On the other hand, for some the work environment was stressful and removal from it very positive. The reduction in stress from not having to commute during rush hour may also be a major consideration.

3. Child Care

The issue of child care has already been mentioned. Basically, if work at home is viewed as a compromise by which one may provide child care and bring in an income, it is also often accompanied by problems of stress, social isolation, and low satisfaction with work. Since day care facilities in this country are either prohibitively expensive or of inadequate quality, it appears that many of those who work at home have little choice, especially when the cost and time of commuting are factored in.

4. Life Style

For those with a choice about working at home (primarily those with a skill which is in demand), questions of life style enter into their choices. In our interviews, those who chose to work at home for personal reasons felt that strong non-work considerations tended to override their concerns about their jobs. (Remember that their skills were in great demand.) These individuals exemplify the argument that nine-to-five in a central workplace is an artifact of management's need for centralized control. They work when and where they want while meeting the employer's needs for their valuable skills.

C. Economic Issues

From an economic viewpoint there are a number of considerations regarding the distribution of work and associated costs. Considerable research has been conducted in several of these areas.

1. Geographical Distribution of Work

Theoretically, work that is performed by means of electronic communication is relatively "location independent". A common example of a continuing trend toward decentralization is the movement of "back office work" in banking to suburban locations where space is less expensive and a relatively inexpensive labor pool is readily available. Theoretically, work may be shifted to areas of the country where employment is especially low because of other industrial shifts.

2. Telecommunications/Transportation Tradeoffs

Over the last decade, considerable research has been undertaken to predict the effect of increased communications capabilities on transportation needs (Harkness, 1977; Kraemer, 1982; Nilles et al., 1976). The basic view is that if computer and communications capabilities were substituted for certain types of travel, transportation and energy costs would be reduced. Based on extrapolations from current energy and transportation needs, Harkness (1977) estimates that if 20 percent of all business travel (including both air travel and business travel by auto) were eliminated through the substitution of teleconferencing this would result in energy savings of 130,000 barrels of gasoline daily (at 1974 levels). Since 25 percent of all mileage travelled and 27 percent of all gasoline consumption is spent commuting, the resulting savings from reduced commuting would be even more dramatic. The report estimates that if fifty percent of all office workers worked in or near their homes six out of every seven working days, the savings in fuel consumption from reduced commuting would be about 240,000 barrels of gasoline daily in 1985 [Harkness, 1977, p.i11].

3. Organizational Costs

For business organizations, remote work is attractive for very specific cost reasons. The increasing costs of travel and of space in urban areas motivate companies to search for alternatives to centralized offices and ways to decrease company travel and employee relocation. In skill areas for which there is high demand, remote work options provide access to an otherwise unattainable labor force and may help to retain existing highly-valued (expensive to replace) employees.

4. Housing Costs

With the option to work at home, the costs of office space are shifted one step further than with decentralization: directly onto the employee. With the costs of housing increasing dramatically, the additional burden of finding a space to work may be particularly difficult. Most homes are not organized for work space. Many people who work at home now utilize the same areas used for other family activities, making work and nonwork particularly difficult to separate and possibly disrupting other areas of family life.

D. Political Issues

There are some broad issues focusing on control over work itself and the relationship of work to other domains of life that can best be described as political. These are discussed below.

1. Employing the Otherwise Unemployable

Many advocate remote work, particularly work at home, as a mechanism for hiring those to whom work is normally inaccessible, particularly the physically disabled and the elderly. Several experiments are currently taking place to employ the severely physically disabled at home doing word processing. From an organizational standpoint, the expense of equipment (usually more elaborate than for the non-disabled) and the fact that the employees never go to the office make these experiments difficult to cost-justify and to support logistically. Work at home may be viewed as an alternative to offering expensive accessibility to work in offices (i.e., special transportation, wheelchair ramps, etc.). On the other hand, it can be argued that many physically disabled as well as elderly should be offered opportunities to get out of their homes and that encouraging work at home for those who would otherwise go to work (however complicated it may be to get there) is a disservice.

2. Women in the Workplace

It is evident that the number of women entering the workforce permanently has grown rapidly in the last decade (General Mills, 1981); it is expected to level off in this decade at a point where women make up 40 percent of the workforce (Bird, 1980). The majority of women with additional family responsibilities now work outside the home (General Mills, 1981); many are single parents while many others represent a significant portion of a necessary two-income family. To this point, the need for women to sustain dual responsibilities for work and family has helped to keep them in lower-status office jobs and to keep professional women out of higher levels of management. The changing definition of women's role in work requires greater

options and flexibility so that non-work responsibilities can be sustained. Obviously flexible work options should not be made available only to women; we believe that the best path to equality of men and women in society is equality in the workplace. Work at home may be considered one of many mechanisms for providing flexibility, although it may also be a mechanism for continuing to exploit women in low-status jobs or keeping them out of higher levels of management.

3. Integration of Work and Family

There is another argument offered on occasion that in the future work and family roles should be more integrated, with parents taking more direct responsibility for children's education as well as sharing domestic responsibilities. An example of this mode of thinking is provided by legislation soon to be proposed called the "Family Opportunity Act" (Gingrich, 1983). This legislation would provide tax incentives to owners of home computers, thus encouraging not only the proliferation of technology in the home but also the use of it for work-related tasks. The introduction of this act may be the catalyst to political polarization around the issues of work at home, thereby inhibiting collective deliberation.

4. Centralization of Control over Work

Most organizations today operate under a framework of centralized management control over all office work. Implicit in this framework is physical control; employees must be seen to be managed. What are the impacts of decentralizing control over work to the individual worker? If work at home is implemented in a positive manner, it provides a great deal more self-control over work pace, output, scheduling, etc. From an organizational standpoint, providing greater

decentralized control can foster innovation, motivation, and productivity (in the sense of a "democratized workplace")'; work at home can be a manifestation of decentralized control. On the other hand, work at home can be perceived as a step toward increasing operationalism: the company contracts specialized skills rather than investing in employees, and the role of independent contractors, offering their skill to whomever is willing to pay for it, increases.

5. Protection of Worker Rights and Benefits

Last but not least, if work at home is to be permitted for its positive qualities, there must be sufficient protection of worker rights and benefits when they are working at home. The fact is that they are isolated from their fellow workers and their mechanisms for communication are limited. Many of the concerns about piece-rates, poor working conditions, etc. can be alleviated if proper controls are enforced.

V. CONCLUSIONS

We have attempted to show that the particular remote work option of work at home has both positive and negative implications. Two important factors combine to determine the nature of the work-at-home arrangement: the degree to which the skill supplied by the employee is in demand, and the method of payment for work performed. In addition, the employee's situation in the nonwork domain (e.g., family responsibilities) influences the employee's view of the option to work at home.

In the future, we predict that work at home will be a relatively insignificant phenomenon, offered for special cases only. Other remote work options such as neighborhood work centers will become even more attractive than they are now. The phenomenon of "remote supervision" will become commonplace whether or not employees are actually at home.

Remote work, and work at home in particular, are examples of potential changes in the nature of the relationship between the organization and the employee. Some alternative, sometimes competing predictions of these changes are summarized below.

A. Remote Work and the Organization

The location independence of many office jobs facilitated by technology permits organizations to consider work options not previously feasible. As organizations become increasingly complex and specialized, one option is for them to move toward more contract work, purchasing specialized skills on an as-needed basis (Handy, 1980). Individuals provide skills, increasingly from remote locations, and remain autonomous. Organizational commitment is minimized.

A very different scenario is for companies to take innovative approaches to investing in human resources on a long-term basis. Organizations that are committed to long-term employment seek out methods of accommodating employees' nonwork needs through flexible work options. Important flexibility is gained by changing traditional limitations of work in time and location; remote work is a significant option that can alter both time and space constraints.

B. Remote Work and the Individual

Some of the social and political issues discussed previously demonstrate that remote work options can effectively decentralize control over work directly to the employee. Individuals who offer a skill in demand on a contract basis enjoy a degree of self-control over their work as well as autonomy. It is possible to decentralize control to "atomized organizations" within a larger organizational culture, retaining a relatively high degree of commitment and fostering innovation (Deal and Kennedy, 1982). Communications and computer support of work is an integral part of the atomized organization.

On the other hand, of course, organizations taking an operational approach to acquiring a skill are not likely to be willing to invest in employee welfare. The potential of technology to support exploitative tactics in obtaining skills, especially those which are not in high demand, is great.

C. Work versus Nonwork

We have discussed the impact of work at home on the nonwork domain. In the long run, some serious questions must be asked about the relative merits of increasing integration (versus separation) of work and family. Proponents of the Family Opportunity Act represent a position that the nuclear family will be the critical social unit in the future and that work should be an integral part of that unit. Others are strongly opposed to measures which would decrease the separation between work and nonwork. Unions are opposed to any measures which would encourage child labor. Our evidence has shown that working and raising children simultaneously can be very

stressful. It would be relatively easy to offer work at home as an alternative to providing adequate day care and thus help reinforce discrimination against women in employment.

The neighborhood work center is at present an idealistic work organization alternative that may combine elements of the atomistic organization with a rich social environment and practical convenient day care (Hedburg and Mehlmann, 1981).

D. Practical Alternatives

So what do we do? One solution is to focus strictly on the option to work at home and develop governmental policy for or against it. A second option is to continue to let social and economic forces determine whether, and to what extent, work at home will be implemented. A third option, which we advocate, is to view work at home as one of a broad set of remote work alternatives about which little is understood at present. A concentrated large-scale effort should be made to study the potential implications of these alternative work options for organizations, for individuals, and for society at large.

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