

**OVERVIEW OF WORK-AT-HOME TRENDS
IN THE UNITED STATES**

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August 1983

Working Paper Series
STERN IS-83-87

INTRODUCTION

The word telecommuting refers to the substitution of computer and communications capabilities for travel to a central work location. Office automation permits many office workers to be potential "telecommuters", performing their jobs at a remote site with the support of computer and communications technology. This technological development suggests that many jobs have the potential to be independent of a particular work location and standard schedule of work hours. The most commonly suggested remote work location is the employee's own home.

Although today's interest in work at home is motivated by the availability of new technology, the phenomenon of work at home is not new. Many self-employed professionals, artists, writers, and craftspeople work at home and set their own schedules. The agrarian society prior to the industrial revolution was based entirely on the integration of work and nonwork in the home for the entire family. The industrial revolution brought "sweat shop" conditions into the home, especially in such industries as industrial sewing; these conditions persist today in some areas [1]. In contrast, the new social phenomenon of telecommuting is motivated by employee requirements and interests that are significantly different from those of the early industrial revolution. This report attempts to document the current trend to work at home as a social phenomenon as well as a technological one.

[1] The Seam Allowance: Industrial Homework in Canada, Laura C. Johnson, Toronto: The Women's Press, 1982.

Companies are showing an interest in work at home for a variety of reasons. They are plagued by skyrocketing costs of office space. Travel and energy costs are increasing while the costs of electronic equipment as a potential substitute are decreasing. Some companies are finding it difficult to attract or retain qualified personnel who must commute long distances to the job or who, for other reasons, find the location or schedule of a traditional office job unacceptable. For some relatively low-skill clerical jobs such as data entry, turnover and absenteeism are serious problems. For these and other reasons, work at home becomes an attractive alternative for certain jobs and certain situations.

For many individuals the opportunity to exercise flexible work options has great appeal. Some give life style considerations high priority in career decisions; in particular, those people with specialized skills who are in a position to negotiate with employers consider location, for instance, as a primary criterion in career choices. The emergence of dual career families has forced companies and couples to look for compromise situations in the event of transfers. Many people value the increased flexibility of being able to work their own hours, set their own pace, and to wear casual clothes. Others see work at home as a way to provide additional income while maintaining primary responsibility for child care. For some groups, such as the elderly and severely disabled, work at home provides an opportunity to utilize valuable skills that would not otherwise be available.

The objective of this report is to document the current trend to work at home in the United States. The focus is on organizational arrangements; we have not attempted to determine how many people, with what type of technology, are working independently at home. Although there has been a degree of press coverage about formal work-at-home arrangements [2], press reports have generally exaggerated the degree to which this trend has grown in the United States. This report provides a review of formal work-at-home programs based on analyses of fourteen such programs that have occurred or are now taking place in companies in the United States. The report also documents a trend to informal work-at-home arrangements negotiated on an individual basis. This practice is considered to be fairly widespread in leading edge companies in high technology industries, primarily in California.

A number of individuals who work at home, both in formal programs and informal work arrangements, were interviewed for this report. In a separate section, the advantages and disadvantages to employees, their reasons for wanting such an arrangement, and their attitudes toward it will be summarized.

Based on these findings, some overall conclusions will be drawn about work at home as a social and technological phenomenon in the United States, both today and in the future.

[2] "If Home is Where the Worker Is", Business Week, May 3, 1982, "Rising Trend of computer Age: Employees Who Work at Home," New York Times, March 12, 1981.

OVERVIEW: FORMAL PROGRAMS

DEMOGRAPHICS

Fourteen companies that have completed or are now conducting formal work-at-home pilot programs agreed to participate in the study. Nine companies had completed pilots and were able to report the results of their evaluations; two companies had only preliminary results to report, and the remaining three were just beginning their pilots at the time of the investigation.

The industries represented by participating companies are reflective of the types of companies that have expressed the greatest amount of interest to date in work at home. Nine companies represent the financial and insurance industries which are heavily dependent on information processing and searching for ways to improve the productivity of this labor-intensive component of their work. Four are computer and communications firms which, while also seeking ways to improve productivity and quality of work life, are aware of the market which would be created for their products if work at home were to become a common phenomenon. One manufacturing firm (non-computer) are represented.

REASONS FOR INTEREST

Companies gave a variety of explanations for their interest in exploring the idea of work at home. Most of their reasons reflect the long-term benefits that could be accrued if work at home were to prove feasible and were made available on an expanded basis. The reasons given for experimenting with work at home were the following:

1. Cost savings. Several pilots were justified on the basis of direct cost savings to the company. This was generally true for those pilots where the basis for compensation was shifted for employees working at home (see Table II). In these cases, direct savings resulted from not paying employee benefits. Other projected direct cost savings were associated with reduced space requirements; this generally was not realized in the pilot phase because the number of employees involved was too small for savings on space to be significant.
2. Increased productivity. In most pilots, increased productivity was recognized as a significant potential benefit even where it was not directly measurable. In the six cases where employees were paid on a piece rate, contract, or hourly basis, productivity increases resulted in direct cost savings. In other cases, it was considered an important indirect benefit.
3. Attracting or retaining qualified personnel. In several cases, pilots were begun explicitly to explore the feasibility of work at home in order to tap an otherwise inaccessible labor force. This labor force includes those who require flexible work hours, such as women with full-time child care responsibility. It also includes those for whom commuting time and expense to work at a central office would be unreasonable. In other cases, work at home was viewed as one of a number of options for increasing employee flexibility, based on a long-term commitment to retaining valued employees. In some pilots, the situation had evolved out of individual employee needs; a typical case was a woman on

maternity leave who did not want to return to full time employment.

4. Social responsibility. Two of the pilots specifically dealt with the severely (homebound) disabled, and were motivated by a corporate commitment to increase employment of the handicapped. A third pilot was completed with the eventual goal of hiring physically disabled for the same work.
5. Computer utilization. At least one company saw a significant advantage in shifting computer utilization to "off-peak" hours. This was also considered a productivity benefit since employees were able to receive immediate turnaround, allowing them to solve problems more efficiently.
6. Market potential. Those companies in the communications industry were implicitly or explicitly interested in the market potential for technology to support work in the home. Management felt they should learn as much about work at home as possible and demonstrate its feasibility internally.

DESCRIPTION OF PILOTS

Type of Job

The types of jobs that were performed at home in the pilots are included in Table I. The term "computer professional" generally refers to programmers, programmer/analysts, or systems analysts. While most of the pilots were aimed at a particular class of jobs (word processing or programmers) four were open to any

professional-level job which met certain characteristics and were approved by their management. (Two of these pilots included computer professionals.) Some of the other professional jobs were course developers, internal auditors, and product managers.

TABLE I
JOB CLASSIFICATIONS OF
FORMAL WORK-AT-HOME PILOTS

TYPE OF JOB -----	NUMBER OF PILOTS -----
Computer professional	5
General professional	4
Word processing	4
Clerical	1

Total	14

It is interesting to note that all the companies that participated in work at home focused on either professional or clerical employees. In our interviews we found rather consistent opinions that what would work for one class of employee would not be feasible for the other. We offer no explanation for this but note that the differences in motivation to conduct a pilot for the two classes of employee were distinct. Generally, pilots focusing on clerical and word processing employees were set up to reduce the costs of performing a necessary task. Pilots focusing on professionals were motivated by a need to attract or retain a valued skill in scarce supply, and thus increase productivity as an indirect benefit.

It would appear that the primary type of job targeted for work at home is one which can be supported by computer equipment; for example, word processing or programming. It is important to note that

in most cases where these jobs were chosen, there was a shortage of qualified people to fill them. In particular, there is a severe shortage of experienced programmers in the United States, a problem which is expected to persist. Companies therefore appear to be motivated by economic reasons to attempt alternate work arrangements when technology makes them possible.

It should also be noted that in most cases the total number of employees involved in a pilot is rather small. Over half of the pilots involved only three or four people. (One company which is now in a preliminary phase has had only one person formally working at home.) Three pilots involved between ten and fifteen people. Two ongoing arrangements involve larger numbers: One company has between fifty and one hundred people working at home part time, while another has a formal arrangement involving work at home after regular work hours that is theoretically available to any professional-level employees who utilize the computer directly in their work.

One program involves work at home after regular work hours only. Of the others, six involved employees working at home two to three days a week. In the remaining programs, employees worked at home full time and occasionally (once a week or every other week) went to the office to pick up and deliver work or attend staff meetings.

Employee Status

Table II shows the status of employees working at home in the organizations studied. This includes their employment status (permanent full time, permanent part time, or contract basis), the payment method, and whether or not benefits are received. Salaried

employees typically receive no compensation for overtime; hourly employees do. In the case of permanent part-time employees, payment by output refers to piece rates. For contract employees, an hourly payment refers to a standard rate per hour worked; payment by output would refer to a fixed-price contract. (There are no cases of fixed-price contracts in this set of pilots.)

TABLE II

EMPLOYMENT STATUS AND PAYMENT METHOD
FOR WORK-AT-HOME EMPLOYEES

<u>No. of pilots</u>	<u>Employment Status</u>	<u>Payment method</u>	<u>Benefits</u>
8	Perm full	Salary	Yes
3	Perm part	Hourly	Prorated
1	Perm part	Hourly	No
1	Perm part	Output	No
1	Contract	Hourly	No

All the pilots with permanent, full time employees on full salary and benefits except one involved professional-level employees. The pilots where the employees' status changed from full time to permanent part time with no benefits involved clerical workers and word processors. Two of the pilots which utilized contracts involved programmers; the third was a temporary arrangement because of government requirements to have the employees on a temporary contract for a trial work period (disabled).

Equipment Support

Most of the pilots involved some form of computer and communications support in the home. There were two general types of configurations:

1. Terminal with telephone connection to the company's main computer. Employees typically also had a separate telephone installed for use with the terminal as well as a modem. In three cases special leased lines were installed, apparently for reasons of data security. A few employees utilized microcomputers rather than terminals but this was not the norm.
2. Word processor with dictation equipment. The four word processing pilots were set up for dictation transcription. All utilized stand-alone word processing equipment as well as equipment for transmitting and transcribing data and voice tapes. The range of sophistication of equipment support for these tasks varied widely.

In most cases, the company paid for installation of equipment and monthly telephone charges. In one case the employees rented the equipment from the company.

Results

Nine out of thirteen companies were able to report on their evaluations of their pilot programs. Of these, six reported substantial to satisfactory improvements in employee performance in the short run. In most cases these results were based on subjective evaluations by the employees and their supervisors; they found that they consistently met or exceeded deadlines for deliverables and were then able to take on additional work. In two cases of clerical work, significant improvements were reported in work turnaround and error rates.

The results of three pilots indicated some problems in terms of performance. These were generally attributed to lack of management commitment, communications problems, or technical problems.

According to management, employees were generally very positive about their work arrangements. It should be noted that in several cases, early participants decided they did not like the arrangement and chose to return to the office full time. The consistent positive pattern of employee reactions is therefore biased by the fact that those who had negative reactions are not included in this study. A more detailed evaluation of employee reactions, based on interviews with the employees themselves, is contained in a separate section of this report.

Reactions by management to the alternate work arrangements were mixed. Several pilots were terminated with a change of management. In the clerical arrangements, where measurable results were attainable and performance improved, management was very positive about the program. In the cases involving professional employees and long-term deliverables, management reactions depended on their own personal styles and whether they felt comfortable with "remote supervision", regardless of employee performance.

Current Status

Of the nine pilots which have been completed, four were terminated and the employees returned to their former work arrangement full time. (In one of these cases some of the employees are working at home occasionally on an informal basis.) The remaining programs were retained or expanded and now continue on a regular basis.

OVERVIEW: INFORMAL PROGRAMS

The description of formal work-at-home programs indicates that there is less activity than some of the news media would lead one to suspect; indeed we feel confident that the picture drawn in this report is more accurate. However, we are also aware of a trend toward more informal arrangements of work at home in certain companies in distinct industries, primarily the "high technology" computer industry located in California. A number of these companies were contacted in order to determine not only how prevalent work at home is, but whether the companies could be perceived as representing future trends in other firms. In particular, the role of technology was examined to determine its importance in facilitating work at home for a greater number of people.

In these companies and elsewhere, it is difficult to determine how many people work at home informally. Cases have been reported of individuals or whole departments working at home without the knowledge, much less permission, of upper-level management or the Personnel Department. Such cases are extremely difficult to document and are not reported here for obvious reasons. In the firms which were willing to let us interview employees for this report, management implicitly if not explicitly sanctioned work at home.

DESCRIPTION OF COMPANIES

The six companies participating fall into three distinct categories:

1. Personal computer manufacturers. Two companies manufacture and sell personal computers primarily for professional use. One of these companies has a standard policy allowing any professional member of the technical staff to work at home on a regular basis subject to management approval. The other company allows decisions to work at home to be left up to the discretion of the employee's manager. In both companies work at home is explicitly or implicitly utilized to help attract and/or retain qualified personnel.
2. Timesharing firms. The employees in both of these firms heavily utilized the communications functions associated with the firms' products. Their work is thus relatively "location independent". One company has had an informal policy to allow people to work at home since it was founded with inadequate space. It also has employees located in other parts of the country because of the relative disadvantages of its location. In the other company, policy on work at home is left up to the discretion of individual managers.
3. High-technology research and development firms. Informal policies exist primarily for employees to utilize equipment after-hours because of heavy utilization of centralized systems during regular work hours.

DESCRIPTION OF WORK-AT-HOME ARRANGEMENTS

Unlike the formal pilots, which varied a great deal in terms of work definition and employee status, these work-at-home arrangements are very similar across companies. All companies have relatively flexible work hours and make equipment readily available to employees for work at home at least outside of regular hours. The companies have a majority of professional-level employees and a relatively small clerical component. All employees who work at home are professional-level, with relatively specialized skills. They are all on full salary and benefits; few work regular forty-hour weeks and they may work substantial amounts of overtime on a sporadic basis. In all of the companies work at home is permitted primarily at the discretion of an individual manager. If there is a formal Personnel Department it is usually aware of the situation and tolerates it.

The primary reason given by management for permitting work at home was that it helps attract and/or retain qualified personnel. The employees themselves tended to view it as a requirement for their continued association with the company (see Employee Reactions).

EQUIPMENT

Equipment support of employees, both in the office and at home, was usually substantial. In particular, those who performed software development for specialized applications required very specialized equipment in both locations.

The two personal computer firms provided an individual machine to every employee who required it for development. In one, a lightweight portable computer was transported between home and office. In the

other, most of those who worked at home had duplicate machines -- one for the office and one for home. Interestingly, in both cases the machines were utilized little for electronic mail.

The timesharing firms utilized terminals to a mainframe computer; everyone who worked at home had at least a terminal and a modem, and electronic mail was utilized heavily. In one company, some of the development work also required a relatively powerful microcomputer which was available to the employees at home.

In the two research firms, the work performed at home did not require such intense computer support. Employees tended to use terminals and modems and several relied on portable terminals which they "checked out" of the office. The available computer support was a limiting factor on what work could be performed at home, primarily because of slow communications speeds.

REACTIONS TO WORK AT HOME

For the most part, management reported that work at home improved employee performance, primarily because their work required intense concentration and their office environments did not provide it adequately. The employees themselves were very positive about it; many said they would leave the company if the privilege were terminated. For the most part, there was no negative reaction from other professional employees doing the same type of work, primarily because the option was available to them as well if they desired it. Supervisors' reactions were mixed but they tended to tolerate it. (More detailed statements about employees' reactions to the work at home situation are contained in the next section.)

EMPLOYEE REACTIONS:
FORMAL VERSUS INFORMAL PROGRAMS

In order to understand better how employees themselves feel about working at home, we conducted in-depth interviews with twenty such employees: eight were participants in formal pilot programs and twelve worked at home under the "informal" arrangements. (Although many of the arrangements in the latter group were relatively formalized, they will be referred to as "informal" in this section to differentiate them from the formal pilots.) In this section, the results of these interviews are presented with some comparisons between the two groups.

BACKGROUND

Duration of Program

Employees in the formal programs had been working at home an average of nine and a half months. The average duration for the informal arrangements was considerably longer, averaging just over two years. Further, the informal arrangements are ongoing, while four of the formal pilots have been terminated.

Nine out of the twenty employees interviewed went into the office at least once a week, often two or three days a week, on a regular basis. The rest appeared to go into the office rarely, if at all. A few employees in the informal programs kept their schedule of going to the office very irregular. Most employees stayed in the office a full day when they did go in.

Reasons for Interest

When employees were asked why they wanted to work at home, their answers were classified by "personal preference" versus "necessity". The responses are shown in Table III. It can be seen that there was little difference between the two groups; however, "necessity" was based on distinctly different rationales. For those in the formal pilots, child care was an overriding concern; in the informal arrangements, four of the employees interviewed lived at some distance from the central office and refused to relocate, thus necessitating the work at home arrangement. More specific reasons for working at home are shown in Table IV. (Some employees gave more than one reason.)

TABLE III

	FORMAL	INFORMAL
OPTION	5	8
NECESSITY	3	4

TABLE IV

REASONS FOR WORK AT HOME*	FORMAL	INFORMAL
Young children	6	2
Handicapped/Health	1	1
Commute		2
Reduced distractions	1	6
Improved work env.		2
Refused to relocate		4

*Not mutually exclusive

It can be seen from Table IV that employees in the informal

arrangements tended to choose to work at home for a much greater variety of reasons than those in the formal programs. Also, distractions in the office appeared to be a much more critical problem. It was apparent from their job descriptions that they required a significant degree of concentration to complete their work.

It should also be noted that there were marked sex differences in several respects. First, seven out of eight of those interviewed in the formal programs were female while only one out of twelve in the informal arrangements were female. Second, all clerical employees in the formal pilots were female, including those who were not interviewed. Third, only one employee who identified child care as a primary reason was male; he was in an informal arrangement and listed it as one of four reasons. These numbers are indeed reflective of trends in the United States: eighty percent of the U.S. clerical labor force is female [3], the majority of computer professionals are male, and the majority of adults with primary child-care responsibility are female.

In general, females were motivated by external constraints (e.g., family) to work at home while men were motivated by personal preference (e.g. reduced distractions, improved work environment).

Compensation Status

All employees in informal programs were permanent, full time, with full salary and benefits. In the formal pilots there was much more variation, as discussed previously. Four out of eight

[3] U.S. Department of Labor, Bureau of Labor Statistics, Report 575, (1979).

interviewed received full salary and benefits. The other four were permanent part-time status, essentially meaning they did not receive benefits. They were paid either hourly or on piece rate.

Table V shows the differences in employee compensation classified by clerical versus professional employees.

TABLE V

	FULL TIME	PART TIME	.	SALARIED	HOURLY	PIECE RATE	CONTRACT
CLERICAL	1	4	.	1	2	2	
PROFESSIONAL			.				
Formal	3		.	3			
Informal	12		.	11			1

JOB DESCRIPTION

Work Definition

We attempted to define the tasks the employees performed in terms of generic classifications rather than specific job titles. In most cases, differences were found along the lines of clerical versus professional rather than formal versus informal.

A unit of work was defined as a measurable output of a task. All professional employees defined a work unit as a relatively long-term (from several days to several months) deliverable. The clerical employees had very short-term deliverables requiring turnaround in a day or even hours. Deadlines were reported as critical only for the clerical employees in the formal programs. In the informal arrangements, deadlines were critical at least some of the time in all cases. Employees tended to work to rather critical deadlines, putting

in substantial overtime, in sporadic bursts. For clerical employees, deadlines were generally imposed, while for professionals they were often agreed upon collaboratively.

The workload was often irregular for eleven out of twenty of those interviewed; for the clerical employees, seasonality affected the regularity of the workload, while for professional employees the general cause was interdependence of their task with other tasks on the same project. All the clerical workers viewed the irregularity as a problem; in two of these cases the employees were paid hourly and management was concerned about the additional expense when employees were underutilized. (No comparisons were given in any case of the actual or expected utilization of employees in-house).

We asked all employees if clerical support was adequate for them to perform their jobs effectively. Interestingly, only one out of twenty said it was not. Nine reported it was adequate and ten reported it was not applicable. What is interesting to note is that most of those in the informal arrangements reported that they did most of their clerical work (drafting letters, filing, etc.) themselves -- electronically. As noted previously, these companies tended to have relatively small clerical staffs. It is possible to speculate that this phenomenon may be indicative of a trend that will spread: that more professional workers take on their own clerical support functions and the need for clerical support staff decreases.

Equipment Utilization

The types of equipment support available to these employees has been described elsewhere. We asked them what percentage of their work day was spent using this equipment and found that, in virtually all cases, it was used 100 percent of the time. We also found that employees in the informal programs tended to use the equipment for non-work related activities, whereas the employees in the formal programs did not.

Communications

We asked the employees with whom, and how frequently, they communicated while they worked at home. In all cases, they communicated almost exclusively with their supervisors and coworkers, particularly if they were part of a project team. They communicated only rarely with clients, vendors, or other service departments within the organization. Communications were primarily by telephone; those in the informal programs who had access to electronic mail mentioned it as the dominant mode of communication but also appeared to utilize the telephone as much as the other groups.

Performance Evaluation

All employees interviewed had a formal performance evaluation once a year or every six months. The professional employees were measured primarily by their ability to meet deadlines; this also served as a form of informal feedback. The clerical employees were measured primarily on the amount they produced per unit time; the quality of the work they produced was checked periodically.

We asked employees whether their work at home situation had affected their chances for promotion. There were marked differences. The clerical employees felt they had little chance of promotion regardless; both they and the professional employees in the formal group felt that the work at home situation had decreased, or would decrease if continued, their chances for promotion. By contrast, the employees in the informal group responded that the question was irrelevant; they were simply not interested in promotion. Most of them stated that they did not want to take on the management responsibilities that would come with promotion. They said they were willing to give up the dubious distinction of promotion in order to work at home.

Work Schedule

About half of the employees interviewed tended to work a schedule which approximated nine-to-five. The others worked relatively regular hours but tended to work early mornings or late evenings. Those in the informal arrangements in particular worked rather extreme hours, either very early in the morning or very late at night. They tended to work these hours by personal preference, while those in the formal programs who worked irregular hours tended to be fitting their work around family constraints.

All except one of those interviewed had a particular place where they worked. For most of those in the informal arrangements and three of the others, this was a separate area only used for their work. For the others, the space where they worked was utilized for other activities when they were not working.

NONWORK SITUATION

We asked each of those interviewed to tell us about their nonwork (i.e., family and leisure) activities and how they had been affected by the employee's working at home.

Fifteen out of twenty of those interviewed had a spouse living with them; none lived alone. Table VI shows the number of households with children of various ages.

TABLE VI

	NO. OF CHILDREN -----	
	FORMAL	INFORMAL
Infant	3	3
2-4 yrs.	3	2
> 4 yrs.	3	1
None	1	7

Child care was, as has already been noted, an important factor in employees choosing to work at home in the formal programs. This was distinctly not the case of the informal programs; except in one case, even those with small children did not have primary responsibility for child care. All eight of the women interviewed had primary child care responsibility while none of the twelve men did. The spouses of most of those in the formal programs worked outside of the home full time; for the informal programs, they were mixed between working full time, part time, or not at all.

We also asked the employees what type of leisure activities they engaged in when they were not working. We found that the majority of leisure time spent by those in the informal programs was spent on

solitary activities: reading, developing electronic games, fixing the house, gardening, walking, birdwatching, meditating, bicycling. In both groups, those with families of course mentioned family activities as prevalent.

EMPLOYEE ATTITUDES

We asked employees whether work at home had a positive or negative effect on a number of aspects of their work and nonwork life. The results, summarized in Table VII, show some interesting contrasts between the formal and informal programs.

TABLE VII

ATTITUDES TOWARD:	F O R M A L					I N F O R M A L			
	POS	NEG	EFFECT	N/A	!	POS	NEG	EFFECT	N/A
Supervision	1	4	2	1	!	5	3	2	2
Coworkers	0	5	2	1	!	4	6	0	2
Commitment	3	0	5	0	!	6	1	2	3
Compensation	1	4	3	0	!	1	0	5	6
Promotability	0	6	1	1	!	3*	4*	3	4
Work Effectiveness	5	1	2	0	!	6	2	2	2
Prof. Development	2	3	3	0	!	1	2	4	5
Stress Reduction	3	2	3	0	!	6	3	2	1
Job Satisfaction	6	1	1	0	!	8	2	1	1
Quality of Child Care	7	0	0	1	!	3	0	0	9
Time for Leisure	6	2	0	0	!	8	2	1	1
Type of Leisure	3	0	5	0	!	6	2	1	3
Community Involvement	1	0	7	0	!	2	0	6	4
Family Relations	6	0	2	0	!	3	2	0	7
General Social Interaction	2	5	1	0	!	2	3	2	5
Physical Health	1	2	5	0	!	4	4	2	2

*Two employees expressed both positive and negative impacts

A few comments are in order about the results shown above.

There was a distinct difference of reaction to supervision between formal and informal programs. Half of those in formal programs felt their relationships with their supervisors had worsened; three out of the four were clerical employees. Only one fourth of those interviewed in the informal groups felt the effect of work at home on supervision was negative.

The majority of employees in both groups felt the effect of work at home on their relationships with their coworkers was negative. This is not surprising since work at home must deprive them of considerable social interaction at work. Somewhat more surprising is the finding that at least some of the employees in the informal programs found that their relationships with coworkers improved. This is indicative of their preferences to avoid social interaction; they often commented that informal chats in the office distracted them from task accomplishment and they would prefer to avoid them. In a separate question on the effects on social interaction, most of those in the informal group reported positive or no effect, while those in the formal pilots report a negative result of work at home on social interaction.

There was little evidence of decreased commitment to the organization as a result of work at home. Rather, almost half of those interviewed said that their commitment actually increased. It should be noted, however, that in interviews with those in informal arrangements we found relatively low commitment to the organization in general. Rather commitment was strong to the particular product, project, or work group. Commitment to the organization was increased,

if at all, because the employee was permitted to work according to his or her personal preference. Several joined the companies for which they worked specifically because they knew they would be able to work at home; several also said that if the company removed that privilege they might seek employment elsewhere. Where commitment increased for those in the formal pilots, it was generally because the company allowed the employees to resolve conflicts (i.e. family responsibilities) that would have made it difficult for them to work otherwise.

All employees who said that overall compensation was reduced because of this work arrangement were clerical; the one clerical employee who did not feel this to be the case was disabled and had not been able to work previously. These employees tended to have family responsibilities and to view work at home as a tradeoff; it was one of few options available to them for bringing in additional income while still maintaining child care. They generally felt that, even if they could make more income doing the same work outside the home, they would incur additional costs for commuting and child care that might make up for the difference. They also, of course, did not receive benefits.

Based on the employees' reactions, there was considerable evidence of a negative impact of work at home on promotability. Three of those in the informal group reported a positive impact on promotability, at least within the sphere where they were rewarded for task accomplishment. They also did not feel that work at home would help their promotability, but two of those also reported negative

effects. At this point, there is no firm evidence of the effect of work at home on promotability in the formal programs because the pilots have not been in existence long enough.

Overall, employees were very positive about the effect of work at home on their personal work effectiveness; they felt they produced better quality work at home whether or not it was recognized by management. The results regarding professional development were mixed, but few felt that work at home offered advantages.

Generally, employees found working at home helped reduce stress. The lack of interruptions and avoidance of "office politics" were reasons given; another important factor is the elimination of stress associated with commuting. However, some employees found that work at home increased stress, primarily when they tried to juggle full-time job responsibilities with full-time family care. The sources of stress (whether job or family) were not apparent, but on at least this dimension it appears that work at home cannot be called a "good" solution to child care. Whether or not stress was increased, employees reported consistently that the work-at-home arrangement improved the quality of child care, primarily because they could do it themselves. Job satisfaction increased overall for both groups of employees.

In terms of the quality of employees' nonwork lives (besides children), the effect of work at home appeared to be very positive. Most reported a positive effect on both their time for leisure activities and the types of leisure activities in which they engaged. In particular, those in the informal group (most of whom did not have

child care responsibilities) took advantage of free time during the day to engage in sports such as skiing, hang gliding, windsurfing. Most of them live in California where such outdoor sports are readily available; several liked being able to engage in such sports and still avoid weekend crowds. Most employees with families also reported improved relationships with other family members.

It has sometimes been hypothesized that work at home may help to place a person's relationship to his or her community above their relationship to work; people may live in a community of their choosing rather than one which is proximal to work. Based on this small sample, however, there was little evidence that relationship to the community was altered by work at home. For the informal group, this may have been as much a function of the "California life style", which is very individualistic and non-community-oriented, as of working at home. None of those in the formal programs became more involved in community activities either, and this could not be explained by regional differences.

Overall, employees felt that work at home was a tradeoff. Those in the formal programs were willing to give up a degree of social interaction, promotability, even compensation for improved child care and family relationships. Those in informal arrangements, who had distinct specialized skills that gave them bargaining power, saw work at home as an important mechanism for improving their own work effectiveness. They recognized they may be giving up promotion opportunities but considered that unimportant relative to "life style" and personal satisfaction with task accomplishment.

SUMMARY AND CONCLUSIONS

In this section, we will attempt to summarize and interpret our findings about work at home in the United States. In order to accomplish that, we must look at it as three separate phenomena: social, technological, and structural.

WORK AT HOME AS A SOCIAL PHENOMENON

It can be seen from the cases 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, or the need to give employees flexible work options in order to accommodate their nonwork (i.e., family) requirements, does not seem to be a major concern. They are interested in attracting a labor force that is not accessible under normal circumstances and are willing to relocate jobs out in order to accomplish this. It must also be kept in mind that the majority of jobs for which work at home is considered (clerical word processing and computing professionals) are not 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. Work at

home is a relatively extreme, and far from ideal, solution to working and providing child care at the same time.

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 somewhere for lifestyle reasons that would preclude work for a company unless they work at home. So far, however, our evidence shows that only those individuals with skills in demand are in a position to request such special arrangements. Underlying these preferences is also often a desire for individual autonomy that overrides 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.

Another relevant point of view regarding work at home, besides those of the organization and the individual, is a political view. So far there has been little political action for or against work at home in the United States, but we expect this situation is expected to change soon. Unions, when asked, are somewhat ambivalent about taking a strong stand but generally opposed to work at home because of its potential for exploitation of employees (via piece rates and isolation from other employees). It must be kept in mind, however, that fewer than ten percent of all clerical employees in private industry are unionized in the United States.

Currently, legislation against work at home is industry-specific; recently a ban against industrial knitting in the home was lifted. Recent legislation has been proposed to provide tax incentives for work at home; the spirit of the proposed legislation is a return to integration of work and family in the home. It is expected that as a result of this proposed legislation the political debate about work at home may become more intense.

WORK AT HOME AS A TECHNOLOGICAL PHENOMENON

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. Based on our observations, we conclude 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. However, it is true that significant changes in technology may see more and more jobs performed "remotely" in some sense.

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 employee's home; the location of the jobs is not important and neither is the time in which 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. We suspect that the most pervasive impact will be "location independence", the general capability to be in touch with work from other locations and around the clock. Whether location independence is good or bad for quality of work life remains to be seen.

WORK AT HOME AS A STRUCTURAL PHENOMENON

The third way that work at home can be viewed is as part of a more general structural phenomenon; the structures of organizations may be altered through decentralization facilitated by location independence of jobs. Basically, many more jobs may be performed remotely from a central location, and the need for central office structures is reduced. Companies in metropolitan areas such as New York City are already 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 less. Technology facilitates these moves but is not the primary motivator.

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

cost. The technology will continue to facilitate this trend as well as increased flexibility of organizational boundaries. Neighborhood work centers, where technical support (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 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 and continue to be made; the realities of organizational structure and "culture", primarily in resisting change to old methods or working and managing, make such changes occur much more slowly in reality.

INFORMAL ARRANGEMENTS: THE ORGANIZATION OF THE FUTURE?

Our examination of a few selected "high-technology" companies was motivated by a desire to determine if they represent the typical company for the future, integrated through advanced technology and thus able to operate with location independence. Although these companies have an exceptional amount of technological support, our conclusions were negative.

The four companies (not counting the two in research and development) are unusual in and of themselves. They are experiencing exceptionally fast growth in an extremely dynamic and high-risk

industry. They are still, however, relatively small, with few levels of management and few signs (yet) of bureaucratic administration. There is a high component of professional (non-managerial) employees, and a relatively small component of clerical employees. Although there is an exceptional amount of investment in technological support per employee (required for the work they do), the use of this technology does not appear to have significantly affected their organizational structures.

Although these companies do provide a great deal more flexibility to their employees than the typical firm, their policies are also strongly motivated by economic concerns rather than quality of work life. There is very strong competition for a set of unique skills and employee demands are considered because of the necessity to retain their skills.

Moreover, there was little evidence in the groups studied of responsibility for the basic operations of the firm (sales, manufacturing, ordering, etc.) There was no evidence, for instance, that those in accounting, manufacturing, or sales were permitted the same flexible work options as those in development. Although development work is probably the most significant operation relative to company success or failure in the industry, it is not tied to the day-to-day operations of the firm and thus can be given more flexibility.

The employees themselves are also unique in certain respects. It is already clear that they have skills for which there is considerable competition. They seem to take advantage of this situation by making

demands to fit their own personal "life style" preferences. The California life style in general encourages individualism and unusual recreational pursuits. Moreover, many of these employees are in their early thirty's and represent the "late-sixties generation", an age group in which many individuals value autonomy and individualism over conformity to organizational norms. Although this statement is a rather vague generalization, it does seem to apply to many of the individuals who we interviewed.

The individuals who work at home, like many of their peers, have moved frequently from one company to the other within the industry and the geographical area. They exhibit strong loyalty to their product and their work group rather than to their company, and value highly individual autonomy over organizational commitment. Companies tolerate these attitudes as well as demands to work at home because of their need for the highly specialized skills the employees have to offer.

In summary, we found little evidence, at least at this point, that companies in the future will encourage work at home for the same reason as the high-technology companies today. The situation represents exceptional employees in exceptional organizations, and so far few conclusions can be made about the role of technology in changing organizational structures and increasing organizational flexibility.

CONCLUSIONS

The following model represents a classification of types of work at home arrangements that may occur, based on the relationship between the employee and the organization:

	SKILL OVERSUPPLY	SKILL UNDERSUPPLY
CONTRACT/ PIECE RATE	Exploitation	Autonomy
HOURLY/ SALARY	Tradeoff	Privilege

Contract/Piece Rate, Skill Oversupply

The primary individuals in this category would be clerical employees whose work can be defined and measured accurately for piece rates. In the cases there was only one example of payment by piece rates, but several companies suggested that the primary barrier to payment by piece rates was lack of an adequate measure of the work.

This is the category of workers for whom unions, naturally, have the most concern. Their primary concern is with the ability of automated office technology to reduce office clerical work to routinized, repetitive tasks, monitored by automatic logging or units produced and error rates, very amenable to payment by piece rates. Work at home becomes easier once jobs are organized this way but is not the major problem.

In the United States, we have not collected enough evidence to make statements about of the extent of growth of this trend. However, anecdotal evidence indicates a growing industry in transcription

typing employing 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, the impact of technology, and the effect on those performing the work.

Contract/Piece Rate, Skill Undersupply

There is also anecdotal evidence to show 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. 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 long-term in 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 makes this form of acquiring work difficult; however, in the future it is expected that more individuals with specialized skills may contract out those skills and make an adequate living without the benefits or disadvantages of organizational membership.

Hourly/Salary, Skill Oversupply

Individuals in this category have a permanent relationship to a single organization, although as in our examples they typically do not receive benefits. In some cases, there is little that differentiates 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 simply exploitative because of piece rates and repetitive work. Because of nonwork constraints, primarily family, many potential employees need work options that will permit them to bring in badly needed income and provide necessarily family care. Because of woefully inadequate day care in this country (public is negligible and of generally poor quality, private extremely expensive), work at home is a less than ideal but feasible option. Therefore, employees view it as a tradeoff: it is very difficult but better than not working at all.

Hourly/Salary, Skill Undersupply

The group of people in this category, best exemplified by those in the informal arrangements, 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. Work at home is one of many innovative work options that demonstrate organizational commitment to retaining employees and to improving their quality of work life. Unfortunately, to date we see few indications that this type of commitment extends much beyond those employees whose skills are unique and in extreme undersupply.

Predictions for the Future

Based on our findings in this study, we find work at home to be an example of two potential trends toward altering the relationship between employees and organizations, based on social phenomena and facilitated by technology.

In one direction, it is possible that organizations will become increasingly operational in terms of acquiring skills. They will operate in such a way as to purchase specialized skills rather than invest in human resources. There will be continued increases in contract work and individuals will become increasingly autonomous in their relationships to their employers. Those with specialized skills which are in demand will benefit economically; those with skills in oversupply or no particular skills will suffer.

On the other hand, work at home may be viewed as one of many innovative mechanisms companies employ precisely as part of their commitment to investing in human resources and improving the quality of work life. Work at home is permitted because management shows trust and commitment in its employees; other flexible work options encourage employees to maintain high productivity for the organization while accommodating their needs outside of the work domain. It is precisely this kind of commitment to quality of work life that is so important to encouraging innovation and maintaining a competitive edge.

We suspect that in the next few years work at home will grow in both directions. We see advantages for both employees and organizations in both. We sincerely hope, however, that organizations

implement work at home and other flexible work options as mechanisms for accommodating individual needs rather than exploiting them.