Chapter 1
Introduction

CONTENTS

Figure

Chapter 1
Introduction

BACKGROUND

This study addresses the capabilities of new computer and communication technologies for monitoring employees' activities in the workplace. New communication technologies such as digital private branch exchanges (PBXs), local area networks (LANs), and digital telephony in the switched network provide more capability to monitor calling patterns as well as content of telephone calls. Equipment and software for telephone call accounting (tracking the time, destination, and cost of calls) make up the fastest growing segment of the telecommunication industry.

The networking of computers, either through LANs or sometimes through the telephone system, provides abroad capacity to monitor work that is performed at a computer terminal. Computer-generated statistics provide the basis of part or all of the work performance evaluation for about 4 to 6 million office workers. For many millions more, computer statistics of some sort are collected every time they use their terminals, even though these records are not currently used for performance evaluation. Most of the employees subject to computer-based work measurement are in clerical occupations, or in other jobs where work is largely repetitive. Ultimately, as electronic mail and other computer-based technology become more pervasive in the office, it is likely that computer-based monitoring will affect a large number of workers at all organizational levels.

Managers say that computer-based monitoring is very useful to employers. Computer monitoring of productivity can help them enhance productivity, maintain production standards, spot bottlenecks, and plan personnel and equipment needs. "Service observation, " the capability to listen in on telephone conversations between employees and customers, helps them make sure that customers receive correct information and courteous service. Telephone call accounting can be a powerful management tool for allocating telephone costs, checking the correctness of telephone bills, and reducing personal use of employers' telephones. The Federal Government, through a recent audit of call accounting records, found that about 33 percent of off-network long-distance calls on the Federal Telecommunications System were personal calls.

On the other hand, there are concerns about these practices as well. There are strong arguments that computer-based monitoring can be abused and that monitoring has potential for invasions of employee privacy, as well as assaults on their autonomy, personal dignity, and health. Computer monitoring of performance provides continuous minute-by-minute records of employee performance and could be used to speed up the pace of work or enforce unfair work standards. Service observation, when done without notice or warning, can contribute to a feeling of being spied upon, and may have implications for the privacy of customers as well as employees. Telephone call accounting could conceivably be used to build a"profile" of an employee's personal or professional telephone contacts which might be used to harrass him or her. In general, the concern is that these new information technology tools might give employers powers of surveillance and control in the workplace that might be abused–used simply for the sake of control, beyond what is necessary to organize the work process.

Monitoring and the Legal Context

In general, the law has recognized the employers' interests in organizing work, selecting technology, setting production standards, and managing the use of facilities and resources. Although some aspects of working conditions may be subject to collective bar-

gaining, the vast majority of office workers in the United States are not represented by unions. Thus, employers have had considerable latitude in making use of new monitoring technologies; they have generally been considered merely extensions of traditional management prerogatives.

On the other hand, the law also provides certain protections to employees, such as the right to join unions, to bargain collectively, or to work in a safe and healthy workplace. One question that may appear before Congress is whether employee health, or the quality of working life, or employees' rights to privacy or personal dignity need protection against possible abuses of work monitoring.

It is possible that the present extent of computer-based monitoring is only a preview of growing technological capabilities for monitoring, surveillance, and worker testing in the workplace. If this is the case, then there may be need for a new balance between workers' rights to privacy or autonomy in the workplace and management requirements for information to efficiently control their resources. A major decision for Congress is whether the present balance between worker rights and management requirements is reasonable, and, if not, if it can be satisfactorily accommodated through stakeholder agreement, e.g., negotiation between labor and management in government and the private sector. If the use of new technology is seen as weakening the voice of employees in such negotiations, Congress may choose to take action to ensure a reasonable balance.

Photo Courtesy of C&P Telephone

Computerization is transforming jobs like customer service and order processing.

Monitoring and the Labor Relations Context[1]

Monitoring is an integral part of a larger system of management, labor relations, industrial competitiveness, and ethical and legal systems. Much is undergoing rapid change in the United States and the issues of who is working, where we work, what jobs we do, and how we do them today may markedly differ even from the immediate past. Technology is a significant factor in these changes; so are international developments, changing labor-management relationships, and cultural values. Some specific changes follow:

- The American labor force has changed dramatically in recent decades, primarily due to the major influx of women, who now constitute close to one-half of all working Americans. It is a labor force that is better educated and includes more non-white workers.
- The shifts away from goods- to service-producing industries has accelerated in the past two decades. The United States is predominantly a white-collar, service- v. goods-producing society.

[1]This section summarizes work in Steven Deutsch, "The Context for Exploring Workplace Monitoring, " contract paper prepared for OTA, September 1986.

- Early automation in the 1950s and 1960s was largely restricted to manufacturing, but there has been an enormous growth of office automation in the past decade and investment per employee by 1990 maybe comparable in office and factory settings. Computers are commonplace in office, and in retail sales.
- There has been a large growth of clerical employees: from 5 million in 1940 to 20 million in 1980, from 1 out of 10 to 1 out of 5 employees in the United States. Only 6.3 percent of males are in clerical jobs while over one-third of all women workers in this country are clericals. Since clerical work is increasingly being done on computer terminals, women are disproportionately affected by the microelectronic technology in the office environment.
- The growth of office employment and the rise 'in office automation makes for a greater proportion of the American work force in settings where computerized work monitoring is possible.
- Collective bargaining affects only about 20 percent of U.S. workers, and most office workers in the private sector are not unionized. A higher proportion of Federal, State, and local government employees are unionized. For union workers, there have been efforts to address the new technology, including workplace monitoring, in collective bargaining agreements and through quality of work-life committees. A parallel activity has included efforts to pass State legislation protecting workers on visual-display terminals (VDTs) and addressing worker privacy issues. Such reforms at the State and local level may well accelerate in the near future.
- The challenge for meeting international competition has pushed many in government, management, and unions to adopt a more cooperative labor-management stance and to work towards cooperative approaches for making best use of new technology. While this trend does not affect all firms, where greater labor management cooperation does exist it has allowed better resolution of many issues related to technology, job protection, training and retraining, and quality of working life.

FINDINGS OF THE REPORT

Finding #l

Computer technology makes possible the continuous collection and analysis of management information about work performance and equipment use. This information is useful to managers in managing resources, planning workloads, and reducing costs. When it is applied to individual employees, however, the intensity and continuousness of computer-based monitoring raises questions about privacy, fairness, and quality of work life.

Information about the progress and status of work is vital to managers of most organizations. Whether their output consists of manufactured goods, services, or information-based products, managers want reliable knowledge about what has been done, how long it took, what remains to be done, what people and resources are available to work with, the status of partially completed products, and so forth. This type of management information helps them to decide if staffing levels are appropriate, if more equipment is needed, if bottlenecks need to be relieved, etc.

In an office, the computer is often now the chief tool for carrying out the work process. The transformation of the original input data to a final product may require many steps performed by the computer system, a human worker, or an interaction between the two. For example, between the time a credit card company receives a sale record, and the time it mails out a payment to the merchant, and a bill to the cardholder, literally dozens of *proc*essing steps are required. The credit card com-

pany processes hundreds of thousands of sale records each week, so meticulous recordkeeping is necessary at each step to keep the process from going awry: most of the recordkeeping is done by the computer software itself, because so many transactions go on inside the computer where they are invisible to the naked eye. Monitoring software does this by keeping track of the time, type, and duration of every relevant transaction. Such meticulous recordkeeping generates a great deal of information that must be processed to produce reports usable to human managers. The particular information and amount of detail wanted will depend on the purpose of the report and the level of management. The president of the firm may want to total only transactions and revenues for the day, but line managers will want more detailed information on which to base day-to-day decisions.

Concern about electronic monitoring becomes most intense when it centers on evaluating the work performance of individual employees. A growing number of firms rely on computer-based monitoring to measure the work of at least some employees. The information can be quite detailed: How many transactions were performed? Of what type? With how many errors? When were transactions performed? How long did they take? What were the longest or the shortest? How many breaks did the employees take? When and for how long?

Although people object to monitoring because it "invades the privacy" of employees, the objections to electronic monitoring applied to individual employees cannot be phrased in terms of privacy alone. This discussion summarizes them in terms of three headings: privacy, fairness, and quality of work life. The effects in these areas are reviewed in greater detail in chapters 2 and 4.

Privacy.–Privacy encompasses the right to be left alone and to not be intruded upon. Some workers complain that electronic monitoring is intrusive because it is making a constant minute-by-minute record, creating a feeling of "being watched" all the time. This, they say, is quite different from having a human supervisor occasionally checking their work. Privacy can also refer to exercising one's own autonomy; even in routine work, there is some personal variation in work style. Some people work fast for short periods but take lots of breaks, others work fast in the morning and slow in the afternoon. These individual work styles may not matter when the basic unit of evaluation is long—say a day or a week. People with widely differing styles might accomplish the same amount of work in a day. However, continuous monitoring offers management more detailed information. If the employer uses the information gathered through monitoring to change the pace or style of work—regulating the number of breaks or requiring people to accomplish as much in the afternoon as in the morning—then the employee loses a certain amount of control over his or her own job.

Fairness.–Fairness is related to the way monitoring is implemented in the workplace. At some locations, employers and workers alike note that electronic monitoring can be a fairer basis for performance evaluation than other more subjective means. On the other hand, at other locations monitoring was viewed by employees as an unfair practice. Chapter 2 outlines some of the factors that might be considered in assessing the fairness of a work measurement program and also reviews the interviews done by and for OTA that suggest there is a range of opinion among workers about the fairness of the way monitoring is used in their organizations. Among the factors included in fairness are: reasonable standards, understanding by workers of the extent and use of the monitoring system, ability of workers to contest or correct records, and participation by workers in the design of the system.

Quality of Work Life.–Quality of work life is a complex area that is affected by many factors in the workplace. Two major objections to electronic monitoring of individual performance are allegations that it contributes to employee stress and stress-related illnesses and that it contributes to an atmosphere of distrust in the workplace. While there has been only limited direct research on the stress effects of electronic monitoring, there does seem to be

some evidence that it can contribute to stress, as will be discussed below and in chapter 2.

Finding #2

Computer-based systems offer opportunities for organizing work in new ways, as well as means of monitoring it more intensively. Electronic monitoring is most likely to raise opposition among workers when it is imposed without worker participation, when standards are perceived as unfair, or when performance records are used punitively. Worker involvement in design and implementation of monitoring programs can result in greater acceptance by workers, but despite activities of labor unions in some industries and recent progress in labor-management cooperation in others, most firms do not have mechanisms to do this.

OTA's report *Automation of America's Offices* discussed in detail the ways in which computer systems can change the organization of office work. The introduction of large mainframe computers in the 1950s and 1960s probably reinforced the tendency toward centralized control, routinization of tasks, and assembly line organization of office work. However newer trends in office automation, allowing "end-user computing' and communication networks that give remote access to central databases, allow more flexibility in work organization. While many firms still use the assembly line model, others have discovered that new information technology is allowing them to "reintegrate" work. This means that jobs are made more interesting, and more effective, by giving the individual (or sometimes a team of individuals) a variety of tasks.

No matter how work is organized in the office, electronic monitoring can be applied to the computers and their users. Whether the work in question is that of a directory assistance operator, performing a very few tasks in a repetitive cycle, or an insurance company's legal case analyst whose work encompasses dozens of different activities, each transaction can still be computer monitored. In interviews with supervisors and workers, OTA found a range of opinion about the fairness and suitability of the performance evaluation systems in their firms.

Photo Courtesy of C&P Telephone

Computerization of directory assistance helps operators perform their jobs more efficiently and also provides means to supervise work electronically.

Employee Participation. -Only a small proportion (about 20 percent) of U.S. workers are unionized. Among office workers this percentage is even lower. About 12 percent of technical, sales, and administrative support workers are represented by unions and 17 percent of managerial and professional specialty workers.[2] In most workplaces, therefore, labor organizations do not play a role in representing employee views about monitoring systems. Even when unions are involved, technological choice, such as the decision to introduce computer equipment with monitoring capability, may be considered a management right that is not subject to bargaining, although some union contracts do require employers to bargain over changes in work technology or performance standards. The monitoring issue has served as a spur to union organizing in some previously unorganized firms.

[2] *Statistical Abstract of the United* States, Table No. 713 "Union Membership of All Workers and Median Usual Weekly Earnings, " 1986, p. 424. The category of managerial and professional specialty includes school teachers, many of whom are unionized.

On the other hand, there is a growing trend in the United States, according to some analysts, toward greater labor-management cooperation in making decisions about new technology and how it is used. This trend is affecting both unionized and nonunionized organizations. While the actual number of firms involved is small, observers are encouraged that some of them are very large firms and leaders in their particular industries.[3]

Work Monitoring in Other Industrialized Countries. -In a number of other industrialized countries, where the power of employees and their representatives in making workplace decisions is greater than in the United States, there appears to be greater use of the collective bargaining process to limit the use of electronic monitoring of individuals. In some countries, legislation ensuring employees a good quality of work life has been interpreted to preclude individual monitoring as an insult to individual dignity. In Norway, Sweden, and West Germany for example, electronic monitoring is generally used to measure the performance of groups rather than individuals. In Sweden, individual monitoring is sometimes used in cases where the union and management agree there is an overwhelming need, or occasionally for nonunionized temporary workers. In addition, in some countries, electronic monitoring runs counter to other norms for enforcing work discipline. In Japan, for example, electronic monitoring of individuals goes against the tradition of teamwork and peer pressure as a means of encouraging good work and is therefore not used. One Japanese executive stated that introducing it would offend both managers and workers. Many Western European countries also have strong data privacy laws governing the use of computer-based files about individuals, but OTA did not find that these laws were a major factor in limiting electronic monitoring. In general, electronic monitoring practices were covered by quality of work life legislation and by labor-management negotiations. Monitoring in other countries is discussed in more detail in appendix A.

Finding #3

There is reason to believe that electronically monitoring the quantity or speed of work contributes to stress and stress-related illness, although there is still little research separating the effects of monitoring from job design, equipment design, lighting, machine pacing, and other potentially stressful aspects of computer-based office work.

Some research suggests that there are a number of possible health problems related to the use of computer terminals or VDTs in general, including vision, muscular-skeletal, psychosocial, and possible reproductive health problems.[4] Many of these problems can be ameliorated or eliminated through good equipment design, proper job training (e.g., allowing frequent breaks or scheduling duties away from the terminal for part of the day), and proper training (instructing workers in proper adjustment of screens, lights, and furniture). In the United States, the way that office automation systems are implemented and used is almost entirely at the discretion of employers, and there is a wide variation in their adherence to good practice in these areas.

Review of the psychological and physiological literature suggests a number of reasons why monitoring could be stressful, and a number of studies have shown a higher level of stress experienced by monitored workers. These studies are discussed in more detail in chapter 2. The particular stress problems raised by electronic monitoring are very difficult to separate from other job design or equipment design factors. For example the job of

[3] See for example, U.S. Department of Labor, Bureau of Labor-Management Relations and Cooperative Programs, *U.S. Labor Law and the Future of Labor-Management Cooperation*, BLMR 104, Washington, DC, 1986; and Nicolas Ashford and Christine Ayers, "Changes and Opportunities in the Environment for Technology Bargaining," Massachusetts Institute of Technology, prepared for the Assistant Secretary for Policy, U.S. Department of Labor, no date.

[4] For a summary, see, Jeanne Stellman and Mary Sue Henifin, *Office Work Can Be Hazardous to Your Health (New* York, NY: Pantheon, 1983); Bob DeMatteo, *Terminal Shock—The Health Hazards of Video Display Terminals* (Toronto: NC Press, 1985); and U.S. Congress, Office of Technology Assessment, *Automation of America Offices, OTA-C IT-287* (Washington, DC: U.S. Government Printing Office, December 1985).

the directory assistance operator is often used as an example of a job where monitoring leads to stress. However, this job is often both monitored and paced by the computer; that is the computer not only measures the amount of time it takes an operator to handle a call, but it also automatically sends the next call as soon as the line is free. In determining why this is a high-stress job, it is difficult to separate the effects of lack of control from the effects of monitoring, and for this reason it is also hard to generalize the experiences of these operators to other types of work.

Finding #4

Monitoring the content of messages raises a different set of issues. Some employers say that service observation (listening to or recording the content of employees' telephone conversations with customers) helps assure quality and correctness of information and by protecting all parties in case of dispute. However, service observation also impacts the privacy of the customer, and workers and labor organizations have argued that it contributes to stress of the employee, and creates an atmosphere of distrust. Monitoring the content of electronic mail messages or personal computer (PC) diskettes also raises privacy issues.

Many telephone systems are designed so that certain users, usually supervisors or qualit y control workers, can listen in on telephone conversations. Service observation is considered an important aspect of quality control in many firms and public agencies that have a lot of telephone contact with the public. In some cases, employers may be liable for misinformation given out by their employees; they therefore want to make sure that all employees follow guidelines. Service observation, when part of a formally established program of evaluation, is legal. There is currently no requirement that employees know precisely when they are being monitored, although, at least in the Federal Government, they must be informed such a program is in effect. Some workers and unions have objected to "secret service observation. They argue that the practice is sometimes used for control or intimidation of workers rather than to protect the customer or the firm. The "secrecy" is removed if the employee and the customer can hear a "beep" tone or other cue when a supervisor is on the line.

Photo Courtesy of AT&T

Supervisors regularly check courtesy and accuracy of telephone operators like these through "service observation," that is, listening in on calls with customers.

Listening in on or recording employees' personal calls or calls outside of a regular service observation program have been considered eavesdropping by the courts. Service observation is discussed in more detail in chapters 2 and 4.

OTA interviewed several employers about their policies regarding the privacy of PC diskettes used by employees. All believed they had a right to search employee diskettes for personal material or unauthorized company information and would do so if they had cause to believe inappropriate material was being stored on the diskettes. Such audits of PC diskettes have taken place in the Federal Government to ensure that computers were used for official business and to check seccurity procedures related to confidential information.

Finding #5

Telephone call accounting (computer-generated records of the time, duration, destination, and cost of calls) gives employers a powerful tool for managing the costs of telephone systems. However, it raises privacy questions when accounting records are

used to track calling habits of individuals. Other cost control technologies can be used to limit nonbusiness uses of telephones, either instead of or in addition to call accounting. Establishing a policy for use of these technologies will be especially important for the Government as it builds a new Federal Telephone System.

Call-accounting equipment and software represent the fastest growing segment of the telecommunication industry in the past few years. Divestiture and deregulation of the telephone industry, along with the falling costs of computer equipment, have made it possible for many firms to take closer control of their telephone costs. Call-accounting software can generate not only a listing of all calls, but can produce reports that highlight calls made on particular phones, to particular destinations, charged to particular accounts or for a certain length of time. All of this information can be useful for telephone systems managers in allocating costs and planning new facilities, but as discussed in chapter 3, they raise questions of privacy and fairness. Many employees use their employers' telephones for some personal calls, and some firms have used call accounting to track and prevent unauthorized telephone use, especially for long-distance calls.

Call accounting has become an issue particularly in the Federal Government, where personal use of long-distance lines is illegal. A recent audit performed by the General Services Administration, under the auspices of the President's Council on Integrity and Efficiency, found that personal use represents 33 percent of the off-network long-distance calls sampled.

Privacy concerns are also raised by telephone call accounting. A great deal of information about a person's personal and professional activities can be derived from analysis of a complete record of his or her telephone calls, even though gathering of such information was not the objective of the call-accounting system. Thus, what happens to those records and who has access to them are important considerations. Some observers have expressed fears that call records could be used to identify or harass whistleblowers, union organizers, or other dissidents within a firm or agency.

There are a variety of technological and administrative techniques that can help businesses and government agencies cut down on waste calls. Some of these can be implemented without using call accounting while others are more effective if used in conjunction with call accounting. These are discussed further in chapter 3.

The Federal Government is preparing to create a new long-distance telecommunications network, and many individual agencies are now planning the purchase of new telephone equipment, including switching equipment with call-accounting capability. Now, as these new systems are coming into place, is a good time for the government to assess the effectiveness of its current policies and determine if more workable guidelines on personal use of telephones might be developed. These options are discussed further in chapter 3.

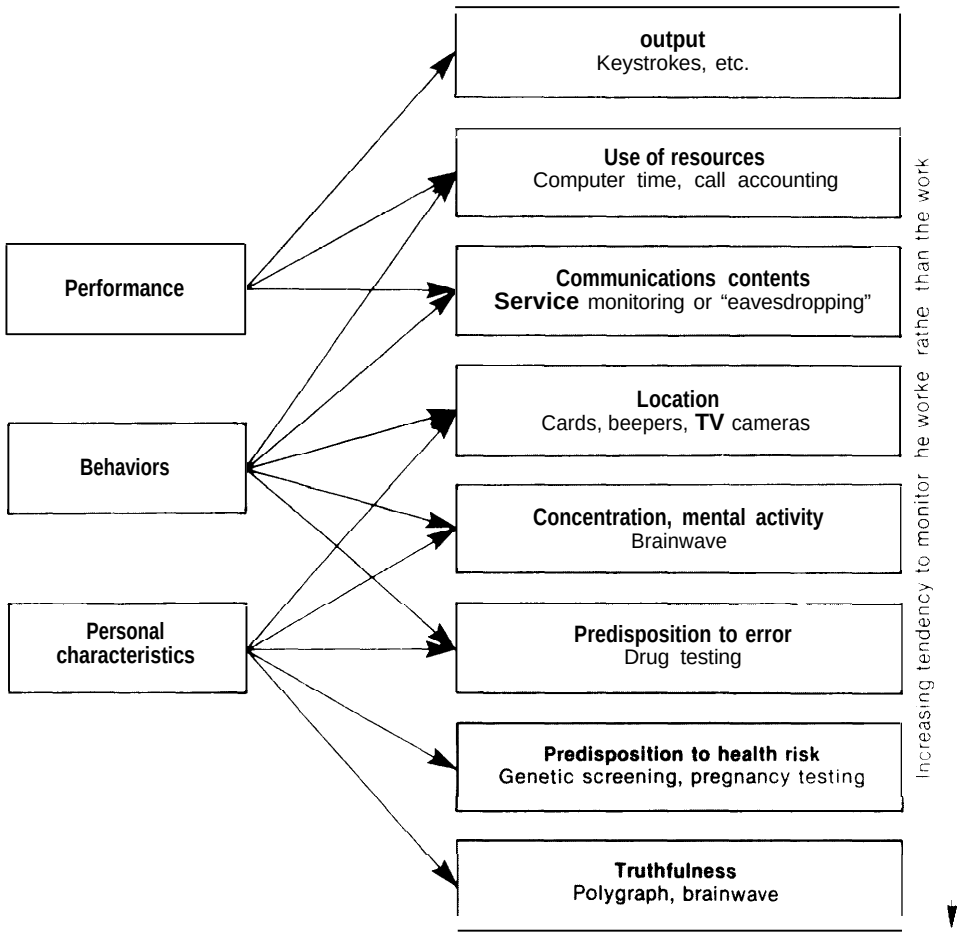
Finding #6

Electronic monitoring is only one of a range of technologies used in today's workplace to gather information about the work process or to predict work quality based on personal characteristics of the workers. Many applications of technology, including polygraph testing, drug testing, genetic screening, and, possibly, brain wave testing, illustrate the tension between employers' rights to manage their enterprise, reduce costs, and reduce liability, and the employees' rights to preserve individual privacy and autonomy. Recent concerns of employers, labor unions, civil liberties groups, the courts, and individual workers suggest that a range of workplace privacy issues are in need of resolution.

Interest in the privacy and stress effects of electronic monitoring, while of long standing in some industries such as the telephone industry, are only now reaching the awareness of the general public. At the same time, some other hotly contested issues related to workplace privacy are also receiving public attention.

Figure 1 shows a range of types of monitoring and testing that raise questions of privacy and civil liberties in the workplace. Some types

Figure 1 .—Some Categories of Behavior Subject To Monitoring, Measurement, or Testing



SOURCE Off Ice of Technology Assessment, 1987

of monitoring seem primarily directed toward measuring work performance or work-related activities in the workplace. OTA has called these "work monitoring" or "work measurement. Other types of monitoring and testing seem to focus more on measuring the worker himself or herself–investigating activities outside the workplace or personal characteristics that might or might not have a bearing on work performance. OTA has called these "worker monitoring' or "worker testing. "

Counting the number of keystrokes someone performs in a day seems on its face to be an example of work monitoring. It is an objective measure of how much work is being done (leaving aside, for the moment the question of whether keystrokes are an appropriate measure for a given job). On the other hand, performing a blood or urine test to determine whether an employee has been using cocaine seems clearly to be a measurement of personal, individual characteristics-a case of worker testing. The test reveals the presence or absence of certain chemicals in the body—it does not show current impairment or measure job performance. This type of testing could be considered predictive-it is used to determine whether a person has potential for poor job performance as a result of drug-induced impairments.

While the terms "work monitoring" and "worker testing" may have some value as

terms of analysis, it appears that all these information-gathering techniques are on a continuum with no clear boundaries. It is not always possible to make a distinction between work monitoring and worker testing. Even the most extreme examples seem to have at least some elements of both. For example, even a keystroke-monitoring system impinges on the worker as an individual if it reveals when or for how long he or she takes breaks, or if the way the monitoring information is used causes stress-related illness. By the same token, if a worker's job requires a high degree of coordination, good judgment, or trustworthiness—e.g., law enforcement or air traffic control—evidence of drug use could be said to be an objective measure of unfitness to do that job. There is a huge gray area between the extremes. Service observation, the practice of listening in on employee's telephone calls with customers, has elements of monitoring both the work process and the worker. It appears, however, that the intensity of the privacy debate increases as we move from techniques that focus on the work to those that focus on the worker.

Although this report is about electronic monitoring technologies, most of which appear to be on the "work performance" end of the continuum in figure 1, OTA looked briefly at several technologies from the "worker testing" end to see the sorts of questions raised through their use. These technologies are discussed in more detail in chapter 4 and appendix B. They are:

- Polygraphs.—The polygraph is not a new technology. It has had limited use in law enforcement for 60 years. Now, however, its dominant use is in personnel screening; of 2 million polygraph tests given annually, about 98 percent are given by employers to job applicants and employees.[5]
- Substance Abuse Tests.–Medical screening for drug or alcohol use, formerly used primarily as a diagnostic tool in clinical settings, was used by the Department of Defense in the 1970s to identify returning Vietnam soldiers with drug problems. Now nearly all military personnel, millions of private employees, and a growing number of government employees find that their jobs depend on passing such tests.
- Genetic Screening. -This is still an emerging technology for predicting a person's likelihood of developing diseases. It is now used only in a few workplaces, usually to identify workers who may be hypersusceptible to chemicals found in those workplaces. However, researchers expect that tests for many common diseases will eventually be commercially available; employers or insurers may want to include them in preemployment physicals.
- Brain Wave Testing.–Still in the research stage are a number of tests based on brain waves. Currently under study is the possible use of brain wave analysis in monitoring the level of concentration, detecting lies or "guilty knowledge, " and predicting certain illnesses. A computer-based system to detect drug use by measuring brain waves is already on the market.

In addition, OTA looked at brain wave research, which in the view of some experts promises improved systems for testing for drug use, honesty, and susceptibility to disease. (See ch. 4 and app. B for a more detailed discussion.)

Serious questions have been raised about the accuracy and reliability of all these tests, as is discussed in more detail in appendix B. Polygraph tests have not been shown to have any validity in employment screening situations, and research shows that they give a high rate of false positive results (innocent people identified as deceptive.) Nor has there been research indicating that use of polygraphs reduces pilferage and other crimes in the workplace. Drug tests can be unreliable due to poor handling of urine specimens, sloppy lab work, or poorly calibrated test equipment. Regulation of commercial labs is spotty, and there are few mechanisms available to enforce high-quality work.

Employers who use polygraphs or drug tests, the types of testing now common, as-

[5] Harrison Donnelly, "Privacy in the Workplace, " *Editorial Research Reports,* Mar. 21, 1986, p. 214, citing figures from the American Polygraph Association.

sert that testing is necessary to protect their businesses and to maintain a safe environment for employees and customers. On the other hand, civil libertarians and others argue that these gains, to the extent they are actually achieved by testing, have a heavy cost: undue intrusion into private lives of employees; creation of an atmosphere of fear and intimidation in the workplace; and false accusation and denial of job opportunities for many innocent people.

Privacy.—Drug testing by urinalysis is clearly intrusive in that it requires the subject to produce a urine specimen under observation. Genetic tests require removal of a blood specimen. Both the polygraph and brain wave testing require the subject to wear electrodes attached to the skin. Beyond these physical intrusions, however, is another privacy problem. Privacy also encompasses the ability to withhold certain information about oneself, and some of these tests reveal information that is not only personal but is arguably not relevant to the employment situation. Drug testing by urinalysis cannot determine when the drugs were used or whether drug use actually impairs job performance. Polygraph testing especially has raised controversy because some employers' tests include personal questions—particular questions on religion, sex life, political beliefs, or union affiliation. A further privacy question relates to the privacy of the records generated by the tests, both within the firm and outside. Such records, once released to insurance companies, employment clearinghouses, or others, might follow a person throughout his or her career.

Fairness. -In this context, the concept of fairness encompasses both the accuracy of the tests and the concept of 'due process' within the testing program. Serious doubts have been raised about the accuracy and validity of all the tests discussed above. There is also controversy about how testing programs are to be constructed: should tests be given on a regular basis to all employees or randomly selected employees, or should they only be given to those who have shown by their behavior that there is reason to think they have been using drugs. A number of court decisions have struck down testing programs that have not relied on probable cause, or at least a reasonable suspicion, that the person to be tested is using drugs. However these cases have all involved State, local, and Federal Government employees who are protected by the fourth amendment against unreasonable searches. Employees do not have this protection from private employers.

Work or performance monitoring tends generally to raise debate about stress, fairness, and the quality of work life, including questions of privacy and autonomy. Worker testing, which tends to be more intrusive and extensive, very clearly raises controversy over individual rights of privacy (i.e., employer and employee rights to know and control certain personal information) and also questions about the accuracy and reliability of the test results. In all cases there seems to be some question of balancing the need of employers to gather information and the desire of employees to keep personal control over some aspects of their work and/or private lives.

HISTORICAL BACKGROUND

Monitoring in History

Work monitoring is not new. Employers have tried, since the earliest days of organized human endeavor, to keep track of how well their employees were working or how much they produced. The organization and supervision of work have changed over time, but it seems clear that work monitoring has been an integral part of industrial development; in many ways work monitoring seems to have intensified as industrialization has progressed.[6]

[6]This section draws on Sandra L. Albrecht, "Historical Background to the Electronic Monitoring of Office Work, contract paper prepared for OTA, August 1986.

Industrialization in the United States has largely been characterized by a separation of planning or organizing the work process from the actual work itself. Organizational structures have evolved that rely on division of labor and place primary knowledge about the production process in the hands of managers rather than individual workers. This gives rise to a need for coordination, control, and standardization of work. The search for greater control leads to a need for more intense monitoring, whether of processes, or work groups, or individual workers, in order to give management feedback to make future decisions.

At the same time, new technologies have been adopted which incorporate certain skills in the equipment, with a corresponding "de-skilling" of work and workers over time.[7] A less skilled work force is one which is easier to manage through intensified monitoring. This is not to say that de-skilling is always the inevitable outcome of technological change. It is important to look at this long-term trend, which may be obscured by unevenness in industrial development. As certain occupations undergo de-skilling others newly created may require skills heretofore unknown. Case histories of individual occupations, however, show that over time these new occupations can also undergo a de-skilling process.[8] This trend may underlie growth in the use and intensiveness of monitoring over time. These trends are illustrated by the history of work organization in the United States dating from colonial times.

The Early Factory .-Although the American Industrial Revolution dates from the mid-1800s, a pre-industrial system of home-based production, known as the "putting-out systern, " already employed home workers for piece rate wages by the late 1700s. Such diverse products as shoes, furniture, lace, and textiles were produced under this system.[9] Textile production employed the largest number of home workers, primarily women and children, to do spinning, weaving, and production of hand cards for combing cotton and wool.[10]

Putting-out is a transition stage between craft production and factory labor, the precursor to mass production. It coexisted for some time with the early mills and factories, but it disappeared by the mid-19th century except in the the garment industry where home workers continued to be employed. This industry is currently seeing a resurgence in what has typically been seen as a pre-industrial work form.[11]

For the most part, deficiencies in the putting-out system gave rise to the factory system. One factor in the development of the factory was the issue of work monitoring. With the putting-out system, workers set the pace of their work day and control of the work process was in their hands. The factory system can be seen as a social control mechanism, where workers were collected together and could be monitored (watched) by supervisors or overseers, both to increase work discipline and to discourage theft.

Some view the social control of workers by employers as the primary reason for the development of the factory. Others focus on the inability of the putting-out system to effectively utilize newly developed machinery that required a central power source. [12] This integral interconnection of social control, organizational structure, and technology is a defining characteristic of industrial development.

---

[7] See Andrew Zimbalist (cd.), *Case Stud"es on the Labor Process (New* York, NY: Monthly Review Press, 1979), both his discussion of Braverman's thesis in the Introduction and subsequent chapters on case studies of the de-skilling process.

"Sandra L. Albrecht, "Historical Background to the Electronic Monitoring of Office Work, contract paper prepared for OTA, August 1986.

[9] Alfred D. Chandler, Jr., *The Visible Hand: The Managerial Revolution in American Business* (Cambridge, MA: Harvard University Press, 1977), pp. 19 and 53.

[10] Edith Abbott, *Women in Industry (New* York, NY: D. Appleton, 1910), ch. 2; and Victor S. Clark, *History of Manufacturers in the United States 1607-1860 (New* York, NY: McGraw-Hill Book Co., 1929), pp. 163 and 539.

[11] Sandra L. Albrecht, "Industrial Home Work in the United States: Historical Dimensions and Contemporary Perspective," *Economic and Industrial Democracy,* vol. *3,1982,* pp. 413-430.

[12] See discussion in Dan Clawson, *Bureaucracy and the Labor Process: The Transformation of U.S. Industry, 1860-1920 (New* York, NY: Monthly Review Press, 1980), ch. 2.

The factory system collected workers together under one roof and joined them through a cash nexus: labor power was a commodity sold by workers and bought by employers. Monitoring increased, in that overseers could count the output and enforce working hours of each individual or group, but the early factory maintained a mixture of traditional and new work forms. New patterns of work hours, work pace, and discipline were instituted; but supervision, though often despotic, was primarily indirect. Management was small in size compared to contemporary standards and less knowledgeable about the actual nature of the work process. "Inside contractors, " skilled workers who understood how to produce the product, were often responsible for hiring employees and overseeing the process. [13] In certain ways, inside contracting carried on the traditions of craft production and brought old styles of personal relations into the factory. But, as industry expanded and employers looked to greater rationalization, efficiency, and intensity of labor, this indirect monitoring of work was seen as an obstacle to increased productivity. Managerial philosophies soon underwent change.

Scientific Management and the Assembly Line.–Frederick W. Taylor, known as the father of scientific management, began what he defined as the scientific study of work in the 1880s, but it was not until the 1910s and later that his work began to be adopted. Taylor was not the first person to scientifically study work; craft workers had historically valued the knowledge of the labor process as well as its production. Taylor's work, rather, was the scientific study of the *management* of work, and represented the culmination of managerial ideas developing in Great Britain and the United States throughout the 19th century."

The significance of scientific management is its extension of the control of work by management. Prior to scientific management, the overall setting of the workplace and workers were monitored: they were concentrated together and supervised, work hours were determined, and discipline used to ensure production quotas. But, the actual performance of work was left in the hands of workers. The central core of Taylor's management philosophy was the idea of the "separation of conception from execution."[15] Decisions about the everyday performance of work were removed from workers, and centralized in the hands of management, who in turn would determine the most rational and efficient method of performance. This brains/hands dichotomy makes management the depository of all knowledge about the work process, capable of determining in minute detail the tasks to be carried out. Workers, divested of this knowledge and control over determining work, were responsible only for carrying out the designed tasks.

With this new managerial approach, work monitoring intensified. Every task within a job came under scrutiny, and elaborate tally sheets and production forms were developed to record each detail in the operation. Measures of hand and eye movements, spacing between worker, machine, and product, time per task, level of efficiency through the day, and the effect of rest periods on production were some of the many new calculations performed in an effort to monitor production more closely. In addition to the information collected on work tasks and worker performance, there was increased emphasis on developing new tools and machinery that would conform to the growing detailed division of labor tasks. This new technology bore a design influenced by employers' interest in increasing control over work and productivity. Jobs became more subdivided and fragmented. This detailed division of labor which separates various job aspects into distinct parts and assigns them to different workers diminishes both the skill and cost

[13] Ibid ch. 3; and, Graeme Salaman, *Class and the Corporation* (Great Britain: Fontana Paperbacks, 1981), pp. 37-41.

[14] For this discussion, see Harry Braverman, *Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century (New* York, NY: Monthly Review Press, 1974), chs. 4 and 5. Frederick W. Taylor describes his ideas in *The Principles of Scientific Management (New* York, NY: W.W. Norton & Co., 1911).

[15] Harry Braverman, *Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century (New* York, NY: Monthly Review Press, 1974), p. 114.

of labor.[16] Scientific management, by separating knowledge from performance, increased the ability of employers to monitor the workplace, not through overbearing surveillance, but by investing them with the knowledge and determination of how work was performed.

The development of the assembly line provides a good example of the changes that were occurring during this period.[17] The Ford Motor Co., established in 1903, began with the employment of highly skilled workers, former bicycle or carriage mechanics, who built entire automobiles. As the demand for the Model T rose, Ford introduced full assembly lines. Rather than skilled mechanics, unskilled and semi-skilled workers performed small operations in stationary positions along the endless-chain conveyor. This system greatly increased management ability to control and monitor both the pace and intensity of work. Introduction of the assembly line, with its skill reduction and corresponding wage leveling, met worker resistance even at its earliest stages. In 1913, Ford had a labor turnover rate of 380 percent, and a unionization drive began.[18]

Scientific Management in the Office.–The application of scientific management greatly increased the volume of information to be transferred from the plant level to the office. The result was a rapid growth in the number of office workers, both managerial and clerical. Scientific management, originally conceived for factory employment, was also introduced into the office.

Many offices were restructured according to a more "industrial' style of organization: jobs were broken down into more detailed tasks, skilled aspects of the job were separated from lesser skilled operations, and the tasks were distributed among differentially paid employees. Such firms as insurance companies, where work was repetitive and easily measured, began to incorporate an assembly-line approach to the flow of work through the office.

Most measures of work production depended on paper and pencil tallies of items completed. However, there were also mechanical aids. Clock-driven "time stamps" were used to record precisely when clerks received and returned measured batches of work. Devices attached to typewriters for counting keystrokes or lines of typing were first used in the early 1900s.[19] The practice of posting charts or tables with each clerk's performance statistics, "to excite the emulation of others, " was considered a useful tool for increasing productivity.[20]

While scientific management as a basic orientation of management philosophy continues today, there have been other philosophies of management with impact on U.S. industry. One was the "human relations" approach fostered by E. Mayo and colleagues at Harvard Business School in the 1930s and 1940s. This philosophy emphasized the social aspects of work and the importance of social support from fellow workers in helping determine worker productivity. Variations on this theme continue to the present. The human relations approach did not replace scientific management, and by the 1950s, the issue of power and real differences between managerial and employee interests were accepted in many managerial theories. The challenge was to integrate work organization goals-harmony, productivity, profits—with those of the employees.

Privacy in the Workplace

The idea that a worker should have some expectation of privacy in the workplace is a new one, one that is only beginning to develop in American law. Only a little more than a century ago, the employer-employee relationship was viewed as analogous to the master-servant relationship; the master had some paternalistic responsibility for the welfare or moral development of the servant; the servant owed obedience and good service. Owners of early

[16] Ibid., pp. 72-83.

[17] 1 bid., pp. 146-151; and Melvin Kranzberg and Joseph Gies, *By the Sweat of the Brow (New* York, NY: G.P. Putman's Sons, 1975), ch. 13.

[18] Keith Sward, *The Legend of Hem-y Ford (New* York and Toronto: Atheneum, 1948), p. 32, cited in Braverman, p. 149.

[19] See, for example, William H. Leffingwell, "This Plan More Than Doubled Our Typists' Output, ' *System,* vol. *30,* November 1961; and William H. Leffingwell, "What 'Scientific Management Did for My Office, System, vol. 30, December 1961.

[20] "William H. Leffingwell, "What 'Scientific Management' Did for My Office, " *System,* vol. *30,* December 1961.

factories believed they had the right, indeed the responsibility, to strictly control many aspects of their employees' lives, on and off the job. In the factories of the 1800s, work rules governing church attendance, place of residence, and nightly curfews were not uncommon. Even as late as the 1910s, the Ford company employed a group of 50 social workers to investigate employees' neighborhoods, home conditions, finances, and habits to determine if they were worthy of profit sharing bonuses."

Gradually over the course of the 1800s, U.S. courts began to view the employment relationship as analogous to a contract between equals, with the employer buying the labor that the employee wished to sell. This view gave rise to the notion of "employment at will." Each party was free to enter or refuse the contract for any reason; if either was later displeased for any reason, either was free to break it; the employer could fire, or the employee could quit. The contract analogy does not recognize the very large differences in bargaining power that often exist between a single individual and a corporation. The National Labor Relations Act of 1935, which obligated employers to bargain with workers' representatives over hours, wages, and working conditions, marked one early action of the Federal Government to modify the employment-at-will doctrine.

The concept that an employee has a right to privacy—either to be free from intrusion or to keep certain information private—is a relatively new one. Throughout the previous century and up through the 1950s, the right of employers to inquire into any aspect of an employee's life was virtually undisputed. Employers could choose their employees in any way they wished, and were quite free to say "We want only this kind of person working. '[22] Worker testing has gone through at least two periods of popularity in the United States, once in the 1920s and again in the 1950s when employers compiled psychological profiles, employment histories, and other files of personal data quite unrestrainedly .2'

During the changing social climate of the 1960s and 1970s, court decisions and worker protection legislation gave employees some protections in how their employers could use information about them and placed a greater burden on employers to demonstrate scientific validity of employment tests. Other legislation, like the Occupational Safety and Health Act, gave employees certain protections as well as rights to information about hazards in the workplace. Antidiscrimination legislation began to limit employers' right to discriminate on the basis of race, sex, religion, age, and (in some States) union activity. A number of States have passed "mini-privacy acts" to provide some protection of workers records. In addition, a number of court decisions in the past two decades have further eroded the doctrine of employment at will, limiting employers' freedom in firing employees.

The changes in legislation and in social values in the 1960s and 1970s gave some measure of additional power to the individual in an employment relationship, and led people to the expectation that they had certain rights, including the right to privacy. Workplace privacy is a new right, however, and probably a tenuous one. It will be tested on two fronts: by the drive toward higher productivity, which encourages employers to use electronic monitoring, and current social concerns, such as drug abuse, that encourage employers to gather more and better information about the people they hire. Although employees are now beginning to feel a right to privacy in the workplace, these pressures to gather information, along with availability of the technological means to collect that information, may weaken the development of this emerging right.

The field of players involved in labor relations questions is broadening. Traditionally the parties involved were the employer, em-

[21] Robert Ellis Smith, *Workrights (New* York, NY: Dutton, 1983), pp. 13-16. Also, Stephen Meyer III, *The Five Dollar Day: Labor Management and Social Control in the Ford Motor Company, 1908-1921* (Albany, NY: State University of New York Press, 1981), pp. 34-35.

[22] Citing Alan Westin in Harrison Donnelly, "Privacy in the Workplace" *Editorial Research Reports,* Mar. 21, 1986.

[23] " Can You Pass The Job Test, " *Newsweek*, May *5, 1986.*

ployees, and, if it existed, a union. Government involvement has been limited to establishment of guidelines for union contracts. Government has also become involved through laws that cover all workers and workplaces regardless of the union or the collective bargaining agreement. These include laws on child labor; minimum wage; nondiscrimination on the basis of race, religion, sex, and age; and finally protection of health and safety on the job. In addition, a number of laws have been passed in the past decade at the State level governing the privacy of employment and medical records and the use of polygraphs in employment.

Such laws were enacted because of heavy lobbying by a range of groups including unions, civil rights advocates, women, environmentalists, community-citizen alliances, health professionals, and others. This move to the legislative area to deal with workplace issues has accelerated in recent years, particularly at the State and local level. The coalition among labor, women, and environmental organizations has strengthened around the introduction of VDTs into the workplace, and on related issues such as computer monitoring. Working together, these groups are largely responsible for the generation of legislative efforts in at least 22 States to explore VDT standards. While most of these have not passed, some have resulted in advisory guidelines, as in New Mexico. In a few States these same coalitions have pushed for laws concerning electronic monitoring and service observation.

The declining proportion of the labor force represented by unions is one of the factors influencing the move toward legislative solutions to worker and workplace problems. There is persuasive evidence that efforts to establish expanded employee rights through State and local legislation will continue, both in the areas of electronic monitoring and in worker testing. Legal and policy questions are summarized below and discussed in greater detail in chapter 4.

POLICY OPTIONS

Before addressing the problem of *how* Congress might act, it is first necessary to consider *whether* and *when* action may be appropriate. Some factors suggest that a "wait and see' posture may be appropriate; uncertainty about whether monitoring causes stress, the lack of judicial precedent, the possibility of privately negotiated restraints on monitoring, and marketplace checks on monitoring are among these. Other factors indicate that Congress may want to act now to alleviate growing concern about monitoring in the workplace. These include the lack of union representation in the bulk of the monitored work force, the inadequacy of current law to address concerns over health, privacy, and dignity, the difficulties of legislating against powerful economic interests at the state level, and the increasing sophistication of the technology itself. Several possible directions of Federal policy are described below.

Option 1:

Take no Federal action concerning work monitoring at this time.

Questions of the fairness of work monitoring practices would be left, as they are at present, in the hands of stakeholders, employers and employees. In industries where labor unions are active, collective bargaining with regard to technology change, monitoring, and methods of evaluation would continue under the current practices.

Although many unions have adopted positions opposing electronic work monitoring, their bargaining strength with respect to it, whether by informal negotiations or by formal collective bargaining or arbitration, is probably not great. However, the monitoring that does take place varies between industries and companies. An argument can therefore be made that, pending the development of a

longer history of negotiations between labor and management on this issue, monitoring is best addressed at the company or union level. The parties concerned are most familiar with the specific problems, and contracts, rather than national policy, may be the best way of approaching what appears to be situation-specific problems (see ch. 4). Under these circumstances, Congress may want to avoid legislating on the issue of monitoring per se, and instead make monitoring an item for compulsory arbitration or collective bargaining under Federal labor law.

This, of course, does not necessarily ensure an outcome that is satisfactory for the majority of monitored workers, who are not unionized and are therefore powerless to negotiate fair monitoring practices, or any other aspects of the quality of work life, through the collective bargaining process. Furthermore, an increasingly large segment of the work force is made up of temporary workers, who, since they come and goon a weekly or monthly basis, have little ability to improve the quality of work life.

There is the argument that natural "market forces" may tend to limit unfair monitoring and preclude the need for congressional action even on behalf of nonunionized workers: employee backlash, low morale, and high turnover should dissuade employers from monitoring practices that their workers find onerous. If monitoring is indeed stress-producing, then employers who use it will inevitably see the effects of stress on diminished quality and output of its product or service. The response to this is that many monitored jobs are routine work that is subject to and indifferent to a high turnover rate, and in many instances, high attrition works to the employer's benefit (by lowering the costs of pension, salary increases, etc.). Thus it is not clear that "natural" checks will be sufficient to ensure that monitoring is not abused.

If natural checks are not sufficient, political action is still available. Unions and other interest groups have worked to pass State-level legislation on monitoring, service observation, or VDT health and safety. These activities will probably continue. Some of these attempts may be successful, giving rise to a variety of legislative or regulatory approaches to dealing with the issues related to electronic monitoring. Some may serve as models for Federal action at some later time, should the need for the harmonizing effect of national legislation be seen more clearly in the future.

Option 2:

Establish whether stress effects of electronic monitoring are an occupational health hazard; if they are, consider creating Federal legislation or regulations governing the use of electronic monitoring.

The effect of monitoring on stress and health-issues which might provide the policymaker with the most direct and least value-laden approach to acting on monitoring—is in a state of scientific uncertainty. There exist few authoritative studies on the effects of electronic monitoring on health. Some studies and informal polls of workers have suggested that monitoring has stressful effects, and there is a certain common sense appeal to the idea that working in fast paced, highly monitored environments may be highly stressful. However, there is no research separating the effects of monitoring from other office stressors, nor is much known about the types of monitoring that are stressful, how stress might be reduced, or how stress due to monitoring manifests itself (if at all) in physiological symptoms. Until more is known about the effects of monitoring on health, policy action under a "stress" rationale may be premature. The policy maker may consider it appropriate, therefore, to initiate studies on stress in the workplace, and on the role that monitoring plays in such stress.

The National Institute of Occupational Safety and Health would seem to be the logical agency to supervise or carry out studies of stress as a workplace hazard. Specific studies of monitored workers would have to be done with an eye to separating the effects of monitoring from those of other workplace stressors, a major deficiency in existing studies. In addition, however, it would be useful to understand more about the phenomenon of workplace stress in general, given the rising number of worker compensation claims and

other evidence of the growing importance of stress in occupational health. Research may reveal that other factors in the workplace are as important as or more important than monitoring in contributing to stress-related illness, and that these should also be covered by protective legislation or regulation.

Option 3:

Consider Federal legislation aimed at gaps in current law. This could be in two possible directions: general legislation aimed at establishing certain rights for employees within the workplace, or surgical legislation aimed at specific monitoring practices.

There have been few, if any, court cases challenging the types of monitoring considered in this report. Two differing conclusions can be drawn from this. The first is that, until the judiciary acts, Congress has no way of knowing the type of legal inadequacies it should address, and ought therefore wait to legislate on work monitoring. The second is that current law is inadequate even to form the basis for a lawsuit, and that Congress must take the lead in providing rights to monitored employees, should it decide that certain forms of monitoring are unreasonable.

Current worker protection legislation gives workers a variety of rights, such as the right to a minimum wage, to organize, to bargain collectively, and increasingly, the right to know about health and safety hazards that form part of the working environment. However, U.S. law has not heretofore involved itself deeply in quality of work life issues nor in issues of personal privacy or dignity in the workplace. There is no legal right to be treated with dignity or as an autonomous person. There is no legal right to a well-designed, interesting job, nor is there law that compels employers to consider employee input in decisions about new technology or new monitoring procedures. To the extent the law treats privacy in the workplace, it looks to a standard of what an employee might reasonably expect to remain private; as discussed in chapter 4, this standard may fail as a guide for action in the face of employer's increasing use of monitoring, surveillance, or testing technologies.

That these issues are not currently addressed in law does not mean they could not be. As is discussed in appendix A, a number of other countries have quality of work life legislation. Such legislation could give guidelines on the rights to health, safety, privacy, constitutional protections, or information that employees can expect to enjoy in the workplace. As indicated earlier in this chapter, the erosion of the doctrine of "employment at will" through antidiscrimination, health and safety legislation, and public interest concerns, has already marked some involvement of the U.S. Government in regulating the work environment. The issue of electronic monitoring in offices is probably too narrow to serve as a basis for comprehensive work environment legislation. It should be just one factor of many to be considered in determining what rights U.S. citizens have in the workplace, both as employers and employees.

However, if blanket legislation on work life quality is neither wise nor desirable, Congress might address concerns over specific issues through the use of specific amendatory legislation. If, for example, telephone call accounting is an area of particular concern, Congress might address the problem specifically by amending the Electronic Communications Privacy Act to comport with what it considers "fair" monitoring practice. The guidelines developed for the audit conducted by the General Services Administration for the President's Council on Integrity and Efficiency might form a template for such legislation, or instead, Congress may mandate alternatives to telephone call accounting discussed in chapter 3 of this report.

Another example of an area of the law not currently addressed, and on which Congress may wish to act, is what might be called *transactional privacy*, or the collection of 'information about information. " For example, the number of keystrokes, the number of visits to the restroom, the destination of calls, etc., all provide information about transactions, rather than about the content of communications or

activities (see part II of ch. 4).[24] Although present law, such as the Privacy Act and the Fair Credit Reporting Act, regulates what can be done with transactional information once collected, it does not forbid its collection as such. As discussed in chapter 4, however, the collection of transactional information, particularly if done on an intensive basis, can arouse feelings of having one's privacy, dignity, and autonomy invaded. Moreover, because of the power of computers to generate profiles and crosshatch many transactions, transactional information can yield informed estimates of the substantive content of communications or patterns of behavior—it can be, in other words, a' 'back door' for getting at personal information that existing law regulates.

Certainly, to forbid or regulate the collection of all transactional information would be unreasonable. Much transactional data collected by electronic monitoring software is used to monitor equipment utilization, to track totals of transactions made, and to determine whether security systems are working properly. The collection of transactional data becomes most subject to controversy when it is collected about the performance of an individual worker. It may be that Congress would choose to treat electronic monitoring as a "right to know" issue for workers; that is, employers could have the right to collect whatever kind of transactional data they wish about employee performance, but would be required to give employees access to, and if need be, correct, this information.

As this report indicates throughout, however, the issue of work monitoring cannot be adequately understood, nor appropriately addressed, in isolation from larger labor-management, privacy, and health and safety contexts in which it is embedded. Nor will specific policy actions taken with respect to particular forms of monitoring necessarily end the controversies arising out of the application of new forms of technology to the workplace. The policymaker should therefore be aware that an exclusive focus on the forms of monitoring considered in this report will at best form the basis for a series of patchwork solutions to what has been a perennial issue between workers and employers.

'Transactional information, it will be recalled, differs from *substantive* information, in that the latter reveals the content or meaning of communications or documents. Transactional information, in contrast, reveals facts about communications or documents.

SOURCES OF INFORMATION FOR THIS REPORT

In compiling this report, OTA used a number of major sources of information in addition to published literature cited in the footnotes throughout the report.

One major OTA contract, completed by Alan F. Westin of the Education Fund for Individual Rights, includes the results of site visits and interviews of 110 public and private offices in 1983 and 1985-86 to examine their use of office automation including electronic work monitoring .25 The Westin report also summarizes some of the legal implications of work monitoring and telephone call accounting, A subcontractor to the Westin project, Dr. Elaine J. Eisenman, provided a paper summarizing her 1984-85 research on employee perceptions of monitoring at six private sector sites (three unionized and three nonunionized). Her findings are based on questionnaires and group workshops conducted with 365 employees and 27 supervisors.[26]

OTA also participated in a survey on office automation equipment use that was conducted

[25]Alan F. Westin, "Privacy and Quality of Life Issues in Employee Monitoring, " contractor report for OTA, 1986.

[26]Elaine J. Eisenman, "Employee Perceptions and Supervisory Behaviors in Clerical VDT Work Performed on Systems that Allow Electronic Monitoring, prepared as part of contractor report for OTA, April 1986.

by Hay Management Group in 1986.[27] In that survey of 45 large New York area firms OTA inserted several questions to determine how many of the firms make use of electronic monitoring for purposes of planning or individual evaluation.

OTA staff conducted semi-structured interviews that encompassed 35 work locations in private industry and in the Federal Government to discuss the use of work monitoring and the reactions of managers and workers to it.

In addition to the staff interviews, OTA contractor Dr. Michael J. Smith, of the University of Wisconsin, conducted semi-structured interviews of 41 monitored workers at 5 work sites.[28] These interviews were in support of his report to OTA on behavioral and psychological implications of monitoring.

An ad hoc group of representatives from a number of labor organizations working under the auspices of the AFL-CIO provided a set of 34 case examples highlighting employee reaction to the use of monitoring at a variety of unionized and nonunionized workplaces in the United States.[29]

Information about the use of electronic monitoring in other countries came from a report by Russell Pipe and Alan F. Westin of the Education Fund for Individual Rights, and one by Dr. Steven Deutsch, of The Center for Work and Society, University of Oregon. Dr. Deutsch also provided a paper on the context of labor management relations in the United States.[30]

Information on historical evolution of work monitoring came from a paper by Dr. Sandra Albrecht, University of Kansas[31] and contributions of Dr. Sharon Strom.

Information on telephone call accounting, in addition to published sources, came from OTA staff interviews of approximately 12 communications managers and 3 telecommunications consultants. Staff also used a mini case study of the State of New York telephone system, based on interviews and documents provided by the State telecommunication office. Staff also interviewed officials of the General Services Administration and a number of Federal agencies. In addition, staff interviewed two experts on whistleblowing.

[27]Hay Group Inc., "1986 Office Systems Survey," September 1986.

[28]Michael J. Smith, Pascale Carayon, and Kathleen Miezio, "Motivational, Behavioral, and Psychological Implications of Electronic Monitoring of Worker Performance," contractor report prepared for OTA, July 1986.

[29]Cited in this report as "AFL-CIO Case Examples, November 1986.

[30]Steven Deutsch, "The Context for Exploring Workplace Monitoring," contract paper prepared for OTA, September 1986.

[31]Sandra L. Albrecht, "Historical Background to the Electronic Monitoring of Office Work," contract paper prepared for OTA, August 1986.

ORGANIZATION OF THE REPORT

Chapter 2 of this report discusses the technology of computerized work measurement, some of the jobs in which it is used, and the workplace issues raised by its use. Chapter 3 focuses on the use of telephone call accounting in both government and private firms, along with the use of other technologies to manage telephone costs. Chapter 4 presents a discussion of the legal aspects of privacy and quality of work life issues as well as a discussion of policy alternatives related to work monitoring and telephone call accounting.

In addition, this report has two appendixes: appendix A discusses policies toward monitoring in some foreign countries while appendix B summarizes the issues raised by worker testing.