THE CONTEXT FOR EXPLORING WORKPLACE MONITORING

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Introduction and Findings

Later chapters in this report will detail the history of monitoring work and the legal framework which applies to employee privacy rights and associated issues of worker protection. This discussion does not duplicate these later reviews, but, rather, provides a distillate or capsule of the broad and significant changes which have occurred in the labor force, occupational structure, technology at the workplace, context of global economics, and labor-management relationships. This overview is not intended to provided an in-depth discussion, much of which is provided in other OTA reports cited below. However, it is argued that as a prelude to understanding the specifics of electronic workplace monitoring, these contextual features need to be outlined.

Electronic monitoring at the workplace is but one feature of the dramatic changes affected by microelectronics in the U.S. and the industrial world economy. The late 1980s can best be understood in the broader context of global economic developments, shifts in the U.S. labor force and occupational structure, and the emergence of microelectronic technology and its widespread application at work. This chapter develops the context into which to place an examination of electronic monitoring and the challenge for the congress and policymakers. Monitoring is an integral part of the larger system of management, labor relations, industrial competitiveness, and ethical and legal systems; and, therefore, must be understood within this framework. Much is undergoing rapid change in the U.S. and the situation today and for the near future is significantly altered from that of a few decades ago. Concretely, the issues of who works in the United states, where we work, what jobs we do

are markedly different from even the immediate past. Technology is a significant factor which has accompanied these change. International developments, changing labor-management relationships, and cultural values have also undergone transition. What follows is an overview of these trends and the setting for the subsequent detailed analysis of electronic monitoring. Findings from this review are:

1) 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 which is also more non-white, as well as better educated.

2) The shifts away from goods-producing to service-producing industries has accelerated in the past two decades. The U.S. is predominately a white-collar, service vs. goods producing society.

3) 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 may be comparable in office and factory settings.

4) There has been a large growth of clerical employees: from 5 in 1940 to 20 million in 1980, from one out of ten to one out of five employees in the U.S. Only 6.3 percent of males are in clerical jobs while over one-third of all women workers in this country are clericals. Women are disproportionately affected by the microelectronic technology in the office environment.

5) The growth of office employment and the rise in office in office automation makes for a greater proportion of the American workforce in settings where computerized work monitoring is possible.

6) Most office workers in the private sector are unorganized. A high proportion of federal, state and local government employees are unionized. For union workers, there has been growing concern and efforts to address the new technology including workplace monitoring in collective bargaining agreements and through quality of worklife committees. A parallel activity has been efforts to pass state legislation protecting workers on VDTs and addressing the worker privacy issues. Such reforms at the state and local level may well accelerate in the near future.

7) The challenge for meeting international competition has pushed many in government, management and unions to adopt a cooperative labor-management scance and to work towards cooperative approaches for best maximizing new technology to improve productivity, quality of production, and quality of working life.

Growth of the Service Sector[1]

Although the American Industrial Revolution, beginning about 1850, started about a century later than England, the pace of manufacturing

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1. A recent OTA report reviews these trends as well. U.S. Congress, Office of technology assessment, Technology and Structural Unemployment: Reemploying Displaced Adults, OTA-Ite-250 (Washington, D.C.: U.S. Government Printing Office, February, 19860. Chapters 4 and 8.

development was rapid. by 1890, the Western Frontier was largely closed and land secured. The massive wave of immigration from that time until World War One remained on the Eastern Seaboard or Industrial Heartland, working the basic manufacturing industries of the country. By the 1920s, the majority of the population lived in urban places and worked in the expanding manufaturing sector.

The United States emerged as the supreme industrial power in the world and remained so through World War Two and into the 1970s. The U.S. produced and marketed commodities all over the world, established the highest standard of living, and this country was the key for rebuilding the defeated and devastated economies of Europe and Japan.

One of the major areas of labor force expansion was in the public sector. The Depression saw the creation of public works, and the World war Two period was one of almost total mobilization of the work force (a record 1.2 percent unemployment by 1944). However, it was in the post-war eara that this country saw the substantial growth of employment in federal, and especially state and local employment. The total public sector employment went from about 5 million to over 17 million, never more than one-sixth of the labor force (16%). While that is still a small proportion of the total labor force contrasted with some other nations (e.g., Sweden with about 38% of the labor force in public employment), and it has recently been declining, it represented a major growth from the 1950s through the 1970s and served a crucial role in meeting the demands for new jobs with a growing labor force.

Office and service employment grew slowly during this period, but escalated rapidly beginning in the 1970s. There has been an explosion of jobs in this sector of the economy, paced by retail/clerical work, services in fast food and other conveniences, communications/information and media, and areas

such as health care, insurance, and the servicing of the electronics industry and microelectronic applications. Projections for job growth in the decade ahead indicate that the service sector will account for the overwhelming proportion of new jobs. Meanwhile, manufacturing will continue to decline in both absolute numbers and as a percentage of the American labor forces.[2] By 1980, 20% were in manufaturing, while 70% worked in the services.[3] Over the past couple of decades, both the nature of jobs and where in the economy Americans work has been markedly altered and the trend in recent years has accelerated and will likely continue to do so in the foreseeable future.[4]

Women and the Labor Force

Few shifts in the American economy are as dramatic as the sex composition of the labor force. In 1950, just prior to the early stages of automation, women were 24 percent of the labor force. By 1970, before the massive application of microelectronics in office settings and the huge expansion of the service sector women were 38 percent of the labor force. The most recent figure for 1986 suggests that almost one-half of all American workers were female -- presently 45% and still increasing.[5]

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2. See U.S. congress, Office of Technology assessment, Technology and Structural Unemployment: Reemploying Displace Adults, (Washington, D.C.: U.S. Government Printing Office, OTA ITE-250, February 1986)

3. Ronald E. Kutscher and Valerie A. Personick, "Deindustrialization and the Shift to Services," Monthly Labor Review, June 1986, pp. 3-13

4. See Janet L. Norwood, "Jobs in the 1980s and Beyond," and Pat Choate, "Looking Forward: Jobs and Workers," both in Daniel Burton, J., et al (eds.) The Jobs Challenge: Pressures and Possibilities (Cambridge, MA: Ballinger Publishing Company, 1986).

5. U.S. department of Labor, The United Nations Decade for Women, 1976-1985: Employment in the United States (Washington: U.S. Government Printing Office, 1985).

While women have continued to enter almost all occupational categories, they remain highly concentrated in a few occupations, and the overall pay gap between men's and women's jobs remains with women earning on the average only 60 percent of what men earn. The percentage of women in the following occupations are: private household workers, 96%; registered nurses, 96%; apparel sales workers, 83%; financial records processing, 90%; elementary teachers, 83.6%; secretaries, 99.1%; childcare workers, 97.6%; kindergarten and preschool teachers, 98.4%.[6]

Women continue to be highly segregated in the U.S. labor force. Over 36 percent of all employed women work in just 10 occupations and 9 of them are female dominated as suggested above. The evidence is that clerical occupations, those most likely to be automated and electronically monitored, have become more female-dominated in recent years.[7] This is reflected in industrial sectors such as insurance, banking, telecommunications, and in the job categories such as office clerks, cashiers, secretaries, bookkeepers.[8] Thus, we have experienced a substantial increase in the numbers of clerical workers, a doubling of the proportion of the workforce which is female, and a high degree of sex segregation among clericals. This is in large part why women are currently experiencing technological change at the workplace in a major way and perhaps differently than the male workforce in manufacturing and in mixed gender occupational categories.

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6. Ibid., pp. 135-137; U.S. Department of Labor, Women's Bureau, Time of Change: 1983 Handbook on Women Workers (Washington, D.C.: D.O.L., 1983).

7. Barbara Reskin and Heidi Hartmann (eds.), Women's Work, Men's Work: Sex Segregation on the Job (Washington, D.C.: National Academy Press, 1986).

8. Heidi Hartmann, Robert Kraut, and Louise Tilly (eds.), Computer Chips and Paper Clips: Technology and Women's Employment (Washington, D.C.: National Academy Press, 1986).

> As recently as 1980, business spent only one-third as much on technology per office work as was spent per production worker. By 1990, investments per employee are expected to be roughly equal in the office and factory. Expanding use of technology is improving productivity in the office, just as it has in the factory.[9]

The rapid rise of office automation has a special impact on women since the overwhelming majority of secretarial and clerical positions are female. The impact in the years to come, something already begun, will range from job dislocation, major changes in job skill requirements and tasks, to work environment concerns.[10] Among the issues in the automated office are those that touch on productivity, access to personal data, and privacy rights which involve electronic monitoring.

The Changing Pattern of Labor-Management-Government Relationships

Technological change does not occur in a vacuum and is typically accompanied by a myriad of related changes. Technological change rarely occurs in an otherwise unchanging environment. Other factors, such as labor-management relations, may change as well.[11] This observation is most fitting for the context of the U.S. in there latter part of the 1980s. The microchip has produced dramatic changes in automating offices as well as factories. In the early stages of automation, the changes were largely in the factories of

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9. "New Tech in the Office," United Technologies ad in New York Times, September 2, 1986.

10. U.S. Department of Labor, Women and Office Automation: Issues for the Decade Ahead (Washington, D.C.: U.S. Government Printing Office, 1985); U.S. Congress, Office of Technology Assessment, Automation of America's Offices (Washington, D.C. Government Printing Office, OTA-CIT-287, December 1985).

11. U.S. Congress, Office of Technology Assessment, Technology and Structural Unemployment: Reemploying Displaced Adults, OTA-ITE 250 (Washington, D.C.: U.S. Government Printing Office, February 1986), p. 324.

the nation; in recent years, the acceleration of application of microelectronic has been in the services and goods-producing sectors other than manufacturing. With the changes in technology, we are noting significant challenges for labor-management relations. As a recent OTA report summarized:

> Business may find that different organizational approaches are more suited to modern technology and that managerial strategies of the past are less appropriate. Automated systems cannot be idiot-proofed; indeed, they tend to be more sensitive, less robust that labor-intensive systems. Thus, although automated systems may need fewer employees, those employees (including production and non-supervisory workers) carry heavier responsibilities and need different skills than workers in older style factories and offices.. This implies that new methods of work organization that encourage workers to participate in solving problems, work with others, and make decisions as members of a team may prove more productive and efficient. Organizational changes of this kind could make the jobs of some U.S. production workers less vulnerable to competition from low-wage nations."[12]

From a strongly laissez-faire philosophy in the early stages of the American Industrial Revolution, the position of government has become more active in relationship to the private economy. Managerial philosophy, the pattern of labor-management relations, and the system of collective bargaining have all undergone transition. The concerns of this larger report, electronic workplace monitoring, have emerged in this broader context and can best be understood within it. An historical review of workplace monitoring is presented later in Chapter 3 and what follows is a cursory overview to outline recent development in the pluralistic American labor relations system.

There has been a long history of efforts to organize workers to best represent their interests associated with their jobs, but the watershed came with the passage of the National Labor Relations Act in 1935. Now more than 50 years old, the NLRA established the right of workers to organize and the

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12. Ibid, p. 321, also see section "Technology and the Organization of Work," p. 355ff.

obligation of employers to bargain with workers' representatives over hours, wages, and working conditions. In 1935, the bulk of union members were craft workers in skilled trades; but the major organizing in the late 1930s and 1940s effectively unionized the large manufacturing industries with semi-skilled and unskilled production workers in auto, steel, rubber, and associated areas. By 1953, over one-third of the U.S. labor force held membership in trade unions. The growth of public sector employment saw state legislation affecting collective bargaining for such workers, and as a result, there exists a unionization rate of twice that in the private sector. Chapter Six of this report amplifies the legal status of workers in private and public employment.

As union membership grew in numbers and collectively negotiated labor-management agreements became more common in American industry, the role of government also continued to shift. A social compact was developed during the late 1930s and during World War Two in which there was widespread acceptance of the right of workers to organize, collective bargaining was institutionalized, and government actively engaged in efforts to maintain industrial harmony and productivity. After World War Two, this accord was shattered somewhat and the first of several key amendments to the NRLA was passed. Nevertheless, the pattern of collective bargaining in which there is an accepted but adversarial labor-management relationship was characteristic.

U.S. economic world dominance faced major challenges in the 1970s, sparking new considerations in the labor-management field. Over the past decade there has been increasing concern over productivity, efficiency, cost control, and international competition. Two divergent trends have emerged in response to these over-riding issues. One has been to accelerate U.S. firms moving production off-shore. A related trend has been the push towards

"concessionary bargaining' whereby employers have sought to reduce costs in U.S. production facilities, often exchanging job security and related guarantees for wage reductions, job rules reform and the like. This pattern has not been limited to the manufacturing sector albeit that is where the dominant pattern has merged. The pressure to reduce costs in non-maufacturing employment within the country is also apparent. Some service operations have also been moved off-shore, such as the American Airlines computer reservation system in Barbados which is facilitated by electronic satellite transmission.

There is a significant alternative response to the global economic challenge of recent years; namely the move towards what has been characterized as "the new industrial relations."[13] This is a generic reference to managerial initiatives to increase labor-management cooperation, creating a better mesh between corporate and employee needs. A major objective of these new industrial relations is increased competitiveness through employee involvement in productivity, quality of production, and the overall quality of working life. This pattern of labor relations does not reject the heritage of collective bargaining, but it stresses the need to go beyond contractual relationships and nurture on-going problem-solving processes. The motivation is pragmatic since the evidence suggests that employee involvement can profoundly affect job satisfaction, morale, productivity and efficiency, performance, and product quality. It is argued that employees, and their representatives if they are organized, have a stake in such an approach because both an improved quality of working life and the success of the firm

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13. See special issue of Business Week (May 11, 1981) on "The New Industrial Relations."

are beneficial to the workers. A wide range of experiments in these modes of cooperative labor-management relationships have been developed since the early 1970s, covering manufacturing and service sectors, public as well as private employers, and in a range fo fields, size of work units, and localities.[14] The approach has been endorsed by some of the largest industries in the country, including those most challenged by international competition and who believe that altered labor relations were fundamental to their viability. Government agencies at the federal, state and local level have also experimented with quality of work life (QWL) programs. The U.S. department of Labor established a Bureau of Labor-Management Relations and Cooperative Programs which actively promotes conferences, disseminates reports, and provides consultation.[15] In an era with considerable philosophical support for deregulation and private sector initiatives, the federal government still plays a role as a catalyst for improved labor-management relations and efforts to increase productivity and American's competitive edge.[16]

The past two decades have witnessed extraordinary changes in the U.S. economy. The internationalization of the economy has grown with foreign investment in the U.S. and major penetration of domestic markets, causing a

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14. An overview of the issue is given in Steven Deutsch and Sandra Albrecht, "Worker Participation in the United States: Efforts to Democratize Industry and the Economy," Labour and Society, 8 (July-September 1983), 243-269.

15. U.S. Department of Labor, A Conference on Quality of Working Life: Issues Affecting the State-of-the-Art (Washington, D.C.: DOL Bureau of Labor-Management Relations and Cooperative Programs, May 1984).

16. President's Commission on Industrial Competitiveness, Global Competition: The New Reality (Washington, DC: U.S. Government Printing Office, 2 Vols. January 1985).

substantial imbalance of payment problems. Meanwhile, U.S. firms have moved a substantial amount of production off-shore, largely as a move to cut costs and meet international competition. The application of new technology has accompanied the global economic trends and some analysts argue that advanced technology is critical to assist this country in reversing the loss of its competitive edge in the world marketplace.[17] Along with calls for relying upon technology to increase productivity and quality have come increasing arguments for a more participative style of management and greater employee involvement in the technologically advanced workplace.

To maximize flexibility in production, firms need to have workforces which are capable of learning, working with new technology, and actively engaging in processes to improve quality and productivity. This is equally true in services as well as manufacturing, in offices along with factories and where they are linked in integrated facilities. The technology has the capacity to mirror traditional managerial values about the workforce and their motivation. This has been a factor which has led to electronic monitoring and which has the potential for countering creativity and employee flexibility.

> "Another reason for decreased employee initiative is that the more an information system can control the details of the job, the less even relatively trivial risk-taking opportunities are available. The monitoring capabilities increase the likelihood that a supervisor will notice a deviation from standard practice."[18]

New Developments in Legislative Reform and Action at the State Level

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17. Ralph Landau and Nathan Rosenberg (eds.) The Positive Sum Strategy: Harnessing Technology for Economic Growth (Washington, D.C.: National Academy Press, 1986); Business Week, "The Hollow Corporation" (March 3, 1986); Business Week, "High Tech to the Rescue," (June 16, 1986); Robert Lund and John Hansen, Keeping America at Work: Strategies for Employing the New Technologies (New York: John Wiley & Sons, 1986).

18. Shoshanna Zuboff, "New Worlds of Computer-Mediated Work, Harvard Business Review, (Sept.-Oct. 1982) p. 147.
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One last feature of the changing labor relations milieu is the broadening of the playing field and the players. Up until quite recently, the situation at work typically depended upon the relationship between employers and employees; where there exists a union it has been formally negotiated in a contractual arrangement which must conform to guidelines in federal and state law as well as court directive. Some laws cover all workers and workplaces regardless of the existence of a union or collective bargaining. 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.

Such laws were neacted 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. For example, the coalition among labor, women, and environmental organizations has strengthened around the introductory VDT's into the workplace.

The rapid growth of use of VDT's has been a significant feature of the office landscape; it is estimated that perhaps 15 million workers use VDT's on the job and the number is continuing to increase in a wide range of settings, including both public and private sector employment. Beginning in the 1970s, new concerns were raised about health effects of working on VDTs, and research studies from around the world demonstrated vision, muscular-skeletal (ergonomic), psycho-social, dermatological, and possible reproductive health problems.[19] In this country, a series of studies by the National Institute

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19. For a summary see Jeanne Stellman and Mary Sue Henifin, Office Work Can Be Dangerous to Your Health (NY: Pantheon, 1983); Bob DeMatteo, Terminal (continued)

for Occupational Safety and Health offered recommendations particularly aimed at reducing vision, ergonomic, and stress problems for VDT workers. In other industrial nations, protective standards were adopted. Because a high proportion of office workers are women who are not in unionized workplaces and therefore are not protected under collective bargaining agreements, coalition building around the issue of VDT's encompassed unions, women's organizations, environmentalists, health professionals and community activists. Working together, these groups are largely responsible for the generation of legislative efforts in at least 22 states to explore VDT workers standards.[20] Some early outcomes have been state advisory guidelines, an executive order by the Governor of New Mexico, and the passage of a bill by the Oregon Legislature although subsequently vetoed by the governor. These efforts continue and there are many reasons to anticipate that such coalitions will grow and work for reforms in automated offices focusing in large part on state legislation. In a few states, these same coalitions have organized to push for laws concerning electronic monitoring at the workplace and there is every reason to anticipate continued efforts in this direction.

A parallel activity emerged a few years ago with states and municipalities passing laws requiring employers to provide information to

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20. For one state perspective see Marianne Parker Brown, Linda Help, and Janet Schneider, "Strategies in Hazard Protection: California Experiences," Labor Studies Journal, 10 (Winter 1986, pp. 290-299).

(continued)

workers about risks of toxics that they were exposed to the job. Such "right to know" laws were passed in many places and then a federal OSHA standard on hazard communication to workers was promulgated. It is clear from this experience that state and local concern and action was catalytic for federal action. State initiatives may trigger nationally standardized approaches at the federal level in the area of workplace monitoring as well.

The key point is that the conditions at the workplace, whether it is exposure to toxic substances, worker protection related to VDTs, or electronic monitoring, are all being addressed outside of the traditional labor-management arena. While these matters are approached within collective bargaining frameworks by managers and affected employees and their representatives, a parallel move has emerged involving a much larger segment of the citizenry. Some of the concerns appear to be gaining supporters across ideological lines, and as the issues become more publizied, the legislative efforts may gain momentum such as in the case of the use of lie detectors at the workplace.[21]

The declining proportion of the labor force represented by unions is one of the factors influencing the move towards legislative solutions to worker and workplace protection. There are federal and parallel state laws covering workplace safety and health, protection against discrimination in hiring, promotion, discharge, and pay, and a range of laws concerning worker right to know and privacy matters covering what data about individuals government can

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21. See Linda Greenhouse, "A Privacy Issue Cuts Across Ideological Lines" New York Times, June 20, 1986; U.S. Congress, Office of Technology Assessment, Federal Government Information Technology: Electronic Record Systems and Individual Privacy, OTA-CIT 293 (Washington, D.C.: U.S. Government Printing Office, June 1986); U.S. Congress, Office of Technology Assessment, Scientific Validity of Polygraph Testing: A Research Review and Evaluation - A Technical Memorandum, OTA-TM-H-15 (Washington, D.C.: OTA, Nov. 1983).

disclose to employers. There is some persuasive evidence that these trends of expanding employee rights through state and local legislation will continue. Closer to the focus of this larger report on electronic workplace monitoring, there is growing sensitivity on the part of unions, civil rights and citizens groups and thus a similar buildup of concern leading to state legislative remedies.

> Labor groups have gone on the offensive against monitoring. More than 20 unions, including autoworkers and communications employees, have negotiated provisions in their contracts to limit the practice. The legislatures of several states, including Wisconsin and Rhode Island, have reportedly discussed laws to regulate monitoring.[22]

As the American labor relations model continues to evolve and greater efforts to establish protection of employees at the workplace are registered in the state legislative arenas, we might well expect that the issues surrounding electronic monitoring, as they touch on workers' health, privacy rights and other concerns, will be explored within the legislative context.

Technological Change at the Workplace

One of the major features of the industrial Revolution was, the application of new technologies in production, and such changes have continued ever since. However, the so-called Second Industrial Revolution which emerged in the 1950s saw a major new development. In addition to harnessing energy in more sophisticated ways, early factory automation introduced technology which displaced human labor. The cybernetics model, linking production automation with computers allowed for feedback systems and accelerated the transition of some production worker jobs into console monitoring and machine tending and repair. In 1950s and 1960s, this "Detroit automation" was largely confined to

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22. Stephen Koepp, "The Boss That Never Blinks," Time (July 28, 1986) p. 47.

mass produced manufacturing industries and limited production units. Nevertheless, the concern over the larger ramifications, potential job loss and the implications for the American economy, the unemployment picture, education, and training led to the appointment of a U.S. Automation Commission in 1965. Its report stressed that dislocation was not the issue but that the challenge was insufficient growth to meet the necessary job creation for 25,000 new jobs per week.[23] Some practitioners and analysts were more pessimistic and warned of the consequences of inadequately planned technological change. The problems cited were partially averted by the changes in the economy and the subsequent developments. The service sector and public sectors grew substantially and absorbed much of the growing labor force. Application of automated technology was limited, and even in the 1980s, it is estimated that perhaps only 5 percent of potential manufacturing automation has been achieved. We are told that the substantial growth of robotics and other technologies is yet to come.[24]

The differences between the early stages of automation in the 1950s and 1960s and the present era became clear with the emergence of the new microelectronic technology. The introduction of this technology was achieved through the very dramatic reduction of cost and much accelerated capacity in the micros as a result of the advances in silicon chip design and technology. Consequently, by the late 1970s and early 1980s, microelectronics

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23. See National Commission on Technology, Automation, and Economic Progress 6 volume report or the summary: Howard Bowen and Garth Mangum (eds.) Automation and Economic Progress (Englewood Cliffs, NJ: Prentice-Hall, 1966).

24. The full range of factory automation issues are reviewed in U.S. Congress Office of Technology Assessment, Computerized Manufacturing Automation: Employment, Education and the Workplace (Washington, DC: U.S. Government Printing Office, OTA-CIT 235, April 1984).

was in application across industrial sectors, in factory and office alike, manufacturing and services, large and small scale enterprises, and in all levels of the public sector. It is estimated that one-half of American jobs are directly affected by microtechnology; for example, up to 15 million workers use VDTs. Because of the high capability and low cost, practically every company and office, production facility or governmental agency, can be automated at some level today. Thus, we need to recognize that the new technology is not selectively applied and limited in its relevance; in fact, most American workers will be directly affected by microtechnology at the job in the next few years.

The use of advanced microtechnology is important in helping to increase productivity and efficiency and in controlling costs.[25] There are also a number of beneficial applications which will reduce health exposures for workers. These factors are the up side. But there is another side as well, and that is the great increase in real perceived treats to job security, altered job tasks, and skill requirements. While technology is but one factor, linked to structural market changes, corporate reorganization, and global competition, it has contributed to the substantial dislocation of workers in the United States since the late 1970s.[26] The fact that over one-fifth of the American labor force experienced some involuntary unemployment during the course of the last year is cause for considerable levels of anxiety.[27] Research makes it clear that fear of job loss is stress producing, and increasingly, this new technology is seen as a source of stress for some

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25. See Business Week, "High Tech to the Rescue" (June 16, 1986).

26. OTA, Technology and Structural Unemployment, op. cit.

27. Markley Roberts, "Workers Without Jobs," American Federationist (March 25, 1985)

employees.[28] As later chapters of this report outline, uncertainty and implications of job monitoring are reported sources of stress for workers in the electronic office.

At the same time, technological change is approached cooperatively in some employment situations. Again, as indicated earlier, some employers have emphasized the role of employee involvement in designing and implementing technology.[29] The planned Saturn General Motors car is an illustration. Other major employers have used QWL and employee participation programs to plan for technological change and job restructuring as well as joint labor-management worker retraining efforts. Ford and the UAW, AT&T and the CWA, are illustrations of this approach to managing technological change. A substantial number of collective bargaining agreements address the matter of technology, including provisions for advance notice of technological change to employees, job protection, health and safety effects, and retraining. In the past few years some greater attention has been given issues such as the lie detectors, electronic monitoring, and chemical and electronic testing for drug use. These and similar issues touch upon privacy, worker rights, and ultimately concerns over dignity and quality of work life.

Technology at the workplace is a complex issue. It is clearly introduced to improve quality, productivity, and to reduce costs. The technology itself is not a problem; but how it is applied does pose a number of questions. These include the relative trade-offs between, on the one hand, civil liberties and individual rights, and on the other, efforts to deal with

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28. Markley Roberts, "Unemployment-Still a Key Issue," American Federationist (April 21, 1984).

29. Robert Lund and John Hansen, Keeping American at Work: Strategies for Employment the New Technologies (N.Y.: John Wiley and Sons, 1986).

security. They include the juxtaposition of economic gains in productivity and the risks in term of worker health, stress and potential abuses of the technology.

In a society which is open and democratic and where assumptions of citizen rights are basic, it is hardly surprising that concerns over privacy rights and the full range of consequences of electronic monitoring have been raised in the Congress, in the media, and among employees and their representatives. This report explores these issues. But, throughout, it is critical to keep in mind that electronic monitoring at the workplace must be examined within the broader context of the economy, the labor force, the labor-management climate, and the full range of new technology applications at the workplace.