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## Human Resource Policy Issues: Panel on Technology and Employment, Committee on Science, Engineering, and Public Policy

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HUMAN RESOURCE POLICY ISSUES  
Panel on Technology and Employment  
Committee on Science, Engineering, and Public Policy  
submitted by  
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Technological change generally brings benefits to all members of society. Products made possible by new technologies increase the choices available to consumers and result in greater satisfaction. Process technological change, the way we produce goods and services, is the key to improving our standard of living through increased output per unit of labor input.

Improvements in productivity are necessary to defend our current standard of living against overseas competition as well. This is the best way to compete in world markets and maintain our higher average wage levels. Technological change that leads to price reductions and improved international competitiveness will increase incomes and employment in both the short run and the long run.

Improvements in technology are also inevitable. They derive from the inquisitive human spirit and the longing to attain a better standard of living. It would be impossible to prevent the application of our knowledge to do things better or more efficiently.

Technological change is good for everyone in the long run, but there can be short run adjustment problems. Changes in technology can cause temporary unemployment, premature retirement or permanent income loss for individual workers. The loss of employment and tax base can have devastating consequences on particular communities. While the gains from technological change are distributed broadly throughout the economy, the costs of adjustment are frequently more narrowly focussed on particular industries, occupations, or regions.

Changes in productive techniques emanate from private decisions. However, there are both social benefits and social costs imposed by those decisions. Sometimes particular individuals are made to pay the cost of displacement so that the rest of us can enjoy the benefits of technological change. For this reason, there is a need for public policy intervention, both to address the equity issues involved in the adjustments to technological change and to increase the speed and adequacy of adjustment to change.

There are other sources of structural change in the economy as well. As tastes change and incomes rise, consumers' demands for goods and services change. Fluctuations in currency exchange

rates can cause distortions in international trade that may cause the decline of particular industries. Substantial price or supply changes caused by natural events or human intervention can have similar devastating impact in particular communities or for individual workers.

These forces produce fundamental changes in the structure of the economic system. The enormous decline of employment in agriculture over the last two centuries is well known. The virtual constancy in employment in manufacturing since World War II (except for cyclical fluctuations) is less well understood. Some analysts feel that the growth in service sector jobs is undesirable because the jobs pay lower wages, or because no "real" product is generated, but it is clear that the forces of structural change are moving us inexorably in this direction.

From a labor market perspective, it is difficult to distinguish between the impacts of technological change and other forces of structural change. The manifestation of declining employment in particular labor markets is similar. However, in both cases the goal of public policy should be to accommodate change and assist in the transition, not to prevent or delay change.

Cyclical unemployment is a further complication. When the depression in the auto industry reached its peak in 1982, it was impossible to determine which autoworkers were unemployed because of the business cycle, which because of loss of market to overseas producers, and which because of technological change. All forces coincided to reduce employment opportunities. From a policy perspective, the major distinction is between permanent job loss and temporary job loss, but this is not an easy distinction to make.

There are three different types of human resource policies that can help in accommodating technological change and structural change in our economy: (1) those that assist the adoption of and adjustment to new technologies within existing firms; (2) those that prepare future workers to face the challenges of new technologies; and (3) those that aid in the adjustment process for workers displaced by technological change. This paper deals only with the first two sets of policies.

## I. ACCOMMODATING TECHNOLOGICAL CHANGE

The fundamental problem in accommodating technological change results from the fear of displacement on the part of workers. Process technological change is generally labor-displacing at the firm level; that is, tasks previously performed by humans will now be done by other means. If productivity per worker is improved, fewer humans are needed to produce the level of output that was previously produced. Of course, the future level of output is the major question since output generally rises with the cost and

price reductions that usually accompany changes in process technology.

The most effective way to overcome worker resistance to change is with more cooperative labor-management relations. Workers need some assurance that they will not become the victims of technological change.<sup>1</sup> The recent study of advanced manufacturing installations by the Manufacturing Studies Board emphasizes how important changes in human resource management policies are to success. They express the fear that lack of reform in American management practices may inhibit our adoption of new technologies and prevent our return to international competitiveness.

Labor-management cooperation is probably critical to effective adoption of new manufacturing technologies, but it is also good social policy in its own right. More participative management styles encourage the development of democratic principles and reinforce broad social values.

The record of the last five years clearly shows that workers can be forced to trade current income and/or work rule flexibility for additional job security (concession bargaining), but this is much more easily achieved in a cooperative environment. If a true community of interest can be developed to replace the traditional adversarial system of labor-management relations, accommodation of technological change and other structural change can be made much less painful for all concerned.

#### RECOMMENDATIONS

##### 1. Encouraging Labor-Management Cooperation

A comprehensive program to promote and encourage labor-management cooperation is needed throughout the country. Pilot programs to create local labor-management committees through the Federal Mediation and Conciliation Service should be expanded. The Department of Labor should be directed to expand its minimal efforts in this area as vital to the future employment of our citizens. A major national endorsement of the process of labor-management cooperation is needed now.

##### 2. Collective Bargaining Law

Where current policy interferes with cooperation, it should be changed. The National Labor Relations Act should be amended to encourage cooperation and discourage resort to legalism in collective bargaining relationships. As one example, plant closing should be made a mandatory subject for bargaining to encourage the exchange of information and the recognition of mutual interests between management and labor.

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<sup>1</sup>Of course, other policy approaches can also achieve this end.

### 3. Full Employment Policy

Perhaps the single most important factor in achieving rapid redeployment of human resources after dislocation by structural change is adequate labor demand. When we enjoy relatively full employment, it becomes much easier to find another job for all displaced workers. Contrarily, when technological change displaces workers into slack labor markets, the prospects for reemployment dim considerably. Further, it is well known that the longer workers spend idle, the less likely they are to reestablish their productive earning capacity. Thus, long-term unemployment is likely to lead to permanent displacement.

## II. PREPARING WORKERS FOR THE FUTURE

Although there are no definitive research results on the impact of technological change on occupational composition, it is clear that the number of jobs requiring significant cognitive and communicative abilities has been growing faster than those that do not. In other words, it is probably true that it is becoming harder and harder to make a good living if one is functionally illiterate (at least in the regular economy). This is because technological change is increasing the complexity of the factory environment and because structural change is causing a shift toward jobs that require greater cognitive skill and less manual skill than was needed in the past.

Review of the adequacy of our occupational skill training system shows that this training system (largely private) appears to be capable of providing the specific skills required by our changing economy. Employers dominate the skill acquisition system, providing as much as 60 to 70 percent of all specific skill training. The increasing role for employers in guiding decision making on training for the economically disadvantaged under the Job Training Partnership Act is clearly a step in the right direction. The job market orientation of most skill training insures that it will be effective in meeting immediate social needs.

There may, however, be a problem with insuring that all labor market participants have sufficient basic competencies to make them trainable or retrainable. Employer concerns about inadequate skills among general high school graduates must be addressed. Technological change, while not the major determinant of these trends, has played a role in heightening concern about the adequacy of basic competencies for trainability in the future. With the uncertainties of labor demand occasioned by possible future impacts of technological change, it behooves us to insure that all our young people have the capacity to participate in the economy of the future.

## RECOMMENDATIONS

### 1. Competency Based Standards

Competency based promotion systems for elementary and secondary schools should be developed and implemented as rapidly as feasible. Research results confirm that rigor is more important than curriculum in determining how much is learned. Students must be given more rigorous standards to achieve and the public education system must certify to the rest of the economy that those standards have been met.

### 2. Appropriate Educational Strategies

A clearer determination should be made of the appropriate educational requirements for labor market entry. Greater concentration on basic skills of reasoning, problem solving, and communicating is needed for general high school graduates. We need to understand more about how different students learn so as to insure that they have the chance to meet basic competency standards.

The appropriate level for occupational skills training should be reconsidered in light of more aggressive goals for basic competency achievement. Restricting vocational education to post-secondary institutions might be considered if that is required to insure that all students attain basic competencies. The National Assessment of Vocational Education at the U.S. Department of Education is very timely. A wide-ranging review of the vocational education mission is critically needed at this time.

Guidelines should also be developed to indicate where the public role ends and the private role begins in occupational skill training. The public role in providing specific vocational training as opposed to general education should be reviewed. Where occupational skills training is retained in public institutions, more contact with actual jobs (cooperative education) should be provided. Increasing participation by employers in program design, implementation, and evaluation should be encouraged.

### 3. Information Needs

There is an appropriate public role in providing the information needed by private decision makers in choosing careers, searching for work, seeking training opportunities, etc. More adequate information supporting individual career choices should be provided as a public service. Accurate labor market information should be made more readily available and more usable to individual decision makers. The schools should provide orientation to particular career opportunities through decentralized means, so that each student can pursue his or her own interests.