

Technology for Company-Employee Partnership to Improve Productivity

William C. Norris
Chairman and Chief Executive Officer
Control Data Corporation

Seventeenth in a series of
perspectives on employing
technology to address the
major unmet needs of society.

No. 17, June, 1981

The 1970s may be remembered as the decade when mounting evidence made it impossible to ignore potential disasters in the areas of energy, food, natural resources, education and other concerns of worldwide dimension.

The 1980s could be the decade that will be remembered as the time when appropriate tools were resolutely put to work to solve those serious problems.

Technology is one word for those tools. In this series of papers, William C. Norris, chairman of Control Data, reflects on how to find, develop and apply technology and its many uses in our society.

This address was given December 8, 1980, to The American Institute of Industrial Engineers (AIIE) in Minneapolis, Minnesota.

Technology for Company-Employee Partnership to Improve Productivity

Currently, we are being bombarded with articles on lagging productivity growth, Japanese competitive threat, and reindustrialization of America. All are attempting to provide direction on one or more aspects of improving productivity to stimulate our faltering economy and restore the competitive position in the world once held by the U.S. But, unfortunately, this torrent of erudition is mostly sounding alarms, identifying problems and rehashing existing knowledge rather than providing answers.

Now, I will talk about answers. And these are not theoretical responses, because I will be reviewing Control Data's activities for improving productivity. Virtually all are applicable to any company.

Before describing them, I should speak briefly about the declining rate of growth of national productivity. Here, we see a complex and consensus lacking situation. Experts have been unable to agree on an overriding explanation for the decline, nor have they been able to agree on the degree of impact of individual factors. However, there is a consensus that a number of causes are important, including lagging innovation, lagging capital investment, the increased cost of energy, underutilized resources (both human and physical), excessive government regulation, and an unresponsive educational system.

"...a number of causes are important, including lagging innovation, lagging capital investment, the increased cost of energy, underutilized resources (both human and physical), excessive government regulation, and an unresponsive educational system."

RESTORING ADEQUATE PRODUCTIVITY GROWTH

Restoring an adequate rate of national productivity growth is an awesome challenge. Every underlying cause must be aggressively attacked both at the national level and within individual companies. While attention is being given to all at Control Data, most emphasis has been placed on innovation and more efficient utilization of human resources. Time limitations will only permit a review of the human resources program and innovation directly supporting it. Essentially, then, I will be describing a massive and creative effort to enhance human resources within Control Data.

Human resources command priority because Control Data is at the forefront of the rapid trend in the United States from an industrial society to an information society. Only some 20% of U.S. workers are now engaged in manufacturing. Therefore, attitudes and behavior are becoming increasingly important, which calls for an even greater effort in responding to personal needs and aspirations in an equitable and humanistic manner.

INNOVATION

A keystone in Control Data's human resources enhancement program is innovation, especially innovation to enrich the lives of individuals. Such innovations are vital because they are enablers in the enhancement effort, or, said another way, providers of many of the basic tools needed to implement the program. I will now describe a number of the most important enabling technologies.

"A keystone in Control Data's human resources enhancement program is innovation, especially innovation to enrich the lives of individuals..."

PLATO® CBE: First and foremost is PLATO computer-based education. Control Data has been engaged in developing PLATO for 19 years. The PLATO system is an educational delivery system of the first order, using many media and structures. The system offers infinite patience and personalization. It is nearly limitless in its versatility and in its delivery of more accessible, less costly and uniformly high quality education and training.

The PLATO system is a complete teaching system which assists and manages the learning process. The PLATO system relates to the student's needs in a way not possible with books alone or in a classroom. It diagnoses student needs, and it teaches, drills, tests and grades in an individualized, self-paced, easy-to-use manner. When the student touches the screen or the keyboard, the PLATO terminal responds immediately. There is a continuous interaction — a give and take — on a personal, one-to-one basis.

Because of its ability to update, flashback, review, explain and animate, virtually any activity can be simulated on the PLATO terminal, creating a learning experience difficult to achieve by any other method. Also, the system can accommodate students with varied knowledge levels, or students studying different subjects, all at the same time.

HOMework: PLATO is central to another enabling human technology called *HOMework*. The objective of *HOMework* is to provide training and employment alternatives to the severely-disabled homebound population.

At the present time, *HOMeworkers* are engaged in programming computers, data preparation and designing educational courseware. Other types of job opportunities are being investigated.

HOMework also provides training and education as well as a means of communication for the disabled persons. A counselor participates in the computer network along with the other employees. It is truly a network of disabled individuals, learning different skills at different rates but sharing the learning experience.

Work-at-Home: The use of PLATO to facilitate working at home is not limited to the disabled. It is also available to a growing number of able-bodied workers to save gasoline and time and lessen frustration by working at home, two, three or four days a week. This program, called *Work-at-Home*, not only saves energy but individual productivity improvements are also being experienced.

Employee skills: The most important enabler is a broad range of PLATO training courses to improve employee job-related skills. I will elaborate on these later.

Concerned Others: Three more enablers which are PLATO courses merit mentioning. One is called "Concerned Others," which is computer-based education and training for those who are trying to deal with alcohol and drug related problems within their families. "Concerned

"... computer-based education and training for those who are trying to deal with alcohol and drug related problems within their families."

Others" recognizes the tremendous trauma that chemical dependency problems cause within a family. This program educates participants about the basic facts of alcohol or drug abuse, how to determine if there is a problem in the family, and where to get help and how. The privacy and immediate availability, along with the depth of learning that can be achieved at low cost through the use of computer-based education, are all critical in successfully dealing with chemical dependency problems.

"Helping Relationship" and "Parenting": Two more PLATO offerings are called the "Helping Relationship" and "Parenting." The "Helping

Relationship" course teaches communications and helping skills for special interpersonal situations. It's based on two beliefs: first, that little problems, left untended, often become bigger, more serious problems; and, second, that peer counseling can be extremely effective in helping people to face and to overcome minor problems and emotional setbacks.

"Parenting," very simply, helps parents rear children. We grew up on the myth that parenting comes naturally, and recognize only now that good parenting is a learned skill. The "Parenting" course is a skills-oriented resource for parents to deal with the uncertainty, lack of knowledge and fear often associated with their new role, especially if they grew up in a home where there was not an acceptable role model.

Employee Advisory Resource: Still another enabler is EAR, which is the acronym for Employee Advisory Resource. Any troubled employee or family member can call a toll-free number at Control Data that establishes contact with a counselor who can help diagnose the problem and provide a solution. EAR serves the whole range of personal, family and work-related problems.

"Any troubled employee or family member can call a toll-free number at Control Data that establishes contact with a counselor who can help diagnose the problem and provide a solution . . ."

Behind that simple description lies human technology that copes with complex human issues. Most of the problems are so personal, or the opportunity for reprisal so real in the employee's mind, that absolute anonymity must be maintained initially for the employee. Only with that confidence is there willingness to proceed with the process of seeking solutions.

The counselor receiving telephone calls cannot be simply a well-meaning individual. The employee with a problem is often unable to articulate the causes of that problem. Each counselor is trained in crisis intervention, a human technology that is especially effective in bridging the distance between the counselor and the calling individual.

The employee is helped by an EAR advocate to make contact with the appropriate community service for help or treatment if necessary. In the case of work-related problems, the advocate's task is to assist both managers and the employee to seek and interpret the relevant facts until a just conclusion is reached for the employee and the company.

StayWell. The last enabling technology to mention is StayWell. This program includes health assessment and health education, with

emphasis on any individual lifestyle changes that are needed to help employees, their spouses and their children stay well. Most of the education is delivered through our PLATO computer-based education courseware. The PLATO system makes it economically feasible to offer high quality training at times and places convenient to the participants.

BETTER UTILIZATION OF HUMAN RESOURCES

All of these enabling technologies support the major effort to better utilize the human resource in Control Data. We have given it the title of "Fair Exchange: A Partnership For Excellence" – and, indeed, it is a partnership, a shared commitment that Control Data will help each employee achieve personal goals at the same time the employee strives to help Control Data achieve corporate goals.

The premise is that we all perform best in an environment of caring where there is a sincere effort to use available resources in an equitable, consistent and humanistic manner, as among employees, company and other constituencies. For many years, Control Data has been making changes in traditional types of employee benefits and developing new ones to help achieve our goals. While there is more work ahead of us, substantial progress has been made, so much so that what we are doing is seen as a new culture building within Control Data – a culture that is distinct from that of other organizations following more traditional practices.

Another basic premise of our commitment to excellence is that the lack of education and training, both in job skills and in understanding the adverse implications of sub-standard performance, is a major barrier to achieving consistently good performance. There is a serious anomaly here in our nation. As we move into an information society where knowledge is paramount, our schools are delivering an increasingly inferior output. Too many people lack even the basic skills nec-

"... as we move into an information society where knowledge is paramount, our schools are delivering an increasingly inferior output."

essary to get a first job or to fully master vocational or professional training. In the past, each generation has achieved a higher level of learning than the previous ones – but today, young people streaming out of high schools, on average, are less skilled than their parents were. We've passed the high point and we are going backwards.

Recently, I experienced the negative consequences of lack of adequate training during the construction of my new energy-efficient home.

Stone masonry, woodwork, wallpapering and painting were superb simply because each of those artisans was highly skilled. As I watched them work, I could quickly see that each had a mastery of his trade. Each was meticulous, and the results were outstanding. On the other hand, much of the mechanical and electrical work was shoddy. Here, it was evident that these technicians lacked needed training in the more complex technology involved in heat pumps, solar energy and control devices. Consequently, they did shoddy work and appeared not to be too concerned about it.

Well, I am sure that each of you can easily recall examples of automobile or home appliance repairs that were far from satisfactory. And if you checked into the reasons, you no doubt found that the work had been performed by someone lacking adequate training.

The same situation is found everywhere and is prevalent in your company and in mine. Substandard performance equates closely with lack of education and training. Inadequacy in skills necessary to do a good job leads to despair. Despair leads to apathy. Apathy engenders shoddy workmanship. Closing the skill gap in each company and in our country requires education and training on an unprecedented scale by industry. In Control Data, we are gearing up to provide whatever amount it takes, possibly on average as much as a tenfold increase over the traditional level of training. The major method of delivery is PLATO computer-based education. Such a massive offering would be neither feasible nor affordable with traditional education and training. It is a substantial part of the company's investment in the partnership for excellence.

“Substandard performance equates closely with lack of education and training...”

Before reviewing the various elements of our basic partnership, let me explain the absence of the mention of productivity. There are a number of reasons. First, the subject has been beaten to death in recent years and many persons are tired of hearing about it. Second, it is too narrowly defined to be as effective a tool as is needed in dealing with today's complex and changing economic picture; for example, it is difficult to measure productivity in services—hence, as our economy shifts to service, we are less able to measure productivity changes. And, thirdly, many employees are turned off by the word because it has the connotation of just working harder or reducing the number of workers required, both of more benefit to the employer than the employee.

COMPANY CONTRIBUTION

Having explained the absence of the word productivity, I will review the company investment in the partnership. To conserve time, I won't elaborate on the conventional elements such as compensation, life insurance and retirement. These are highly important but widely used and well known.

Innovative benefits: Instead, I will move on to innovative employee benefits and first note as background the severe strains on the American work force today caused by pressures on the family, in part due to a growing segment of American society becoming increasingly mobile. Either by choice or because of frequent transfers, families are leaving behind many of their traditional support systems – relatives, childhood friends, churches and so on. This lack of support becomes especially crucial in times of unusual stress. Pressures that can't be shared with traditional support systems overload the family's capacity to cope – and tragic evidence emerges in the form of alcohol and drug abuse, suicide, and an unprecedented number of divorces.

Hence, for this reason and because society has become much more complex, there is an unprecedented need for a spectrum of support services for employees. At Control Data, the EAR, "Concerned Others," "Helping Relationship," "Parenting," StayWell, HOMEWORK and Work-at-Home programs described earlier provide direct support. Indirect support is provided by recreational and employee gardens programs. In total, the company is striving to do what it can do and ought to do by way of support services, which is part of the company's efforts to provide an environment of fair dealing.

Skills development for managers: Next, I will review skills development programs and start with those for managers because the single, most important means for improving company performance is better management. One primary area which managers need to influence for improved performance is human resources. Most managers are adept at getting things done. The prevailing system of management guarantees that, because those managers who don't get things done don't enjoy a long tenure. What the system doesn't assure is the most efficient process for getting things done in the long term, in part because too much emphasis is on short term goals. This results in most managers being much better at controlling and directing the non-human side of the enterprise – such as assets, design effort, production methods – than in managing human beings.

There is an adequate amount of human technology available on how to best respond to the wide varieties of attitudes, needs, interests and motivations of individuals. The deficiency is simply that most managers are not using it. Considering that nearly 80% of today's work force are professionals, managers, technicians, salespersons and clerical workers, attitudes and behavior are crucial to performance improvement.

A second glaring weakness in managers is the inability to effectively adapt to matrix management. Shifting back and forth from being a boss in one role, interacting with peers in another and being a follower in still another – all occurring within an afternoon at work – requires a lot of skills, interpersonal as well as managerial and organizational.

“This results in most managers being much better at controlling and directing the non-human side of the enterprise... than in managing human beings.”

Clearly, a vast increase in training for all levels of management is required, and it must be comprehensive, of high quality, easily accessible and affordable. PLATO computer-based education is the only approach which can offer all these.

Skills development for non-managerial personnel: For non-managerial personnel, a huge increase is being made in functional training in all categories, including purchasing, personnel, accounting, marketing, clerical and so on. Each employee will be reached, and, to accomplish this, PLATO learning facilities are being made available within easy walking distance. Again, as previously mentioned, this would be neither feasible nor affordable with traditional education. Not feasible because traditional types are not readily accessible at times convenient to the individual; not affordable because of high cost, in part due to travel and excessive time away from the job.

Also, the mere presence of convenient accessibility to education and training provides stimulation. People get worn out doing the same tasks day after day. Therefore, frequent and brief periods of training will provide stimulation in addition to the improvement of skills.

“Inflation fighting”: The last innovative employee benefit that I will mention is “Inflation Fighting.” This is a wide spectrum of company activities to help employees better cope with the devastating impact of persistent inflation by making better use of their incomes. Employee surveys rank taxes as the number one problem, followed by costs of transportation, food, housing, health care and education. In response, we’re providing the following assistance to our employees:

- Extensive PLATO training courses in such subjects as creating a tax-oriented budget, money management, proper use of credit, investing and insurance planning, and comparison shopping
- Free home energy audits

- Car pooling, busing
- StayWell
- Information on obtaining educational loans for family members
- Employee gardens
- Volume discounts in food purchasing

There are others; however, suffice it to note for this talk that the major thrust is equitably applying existing resources of a large company to help employees help themselves.

UNDER DEVELOPMENT

Arbitration: I will now review two programs under development and start with arbitration. We have been working on it for quite some time, and we are very close to implementing a program that will guarantee our employees full arbitration before a panel of other employees – in any and all disputes within the company. We believe this program will introduce the greatest sense of justice, which our employees have come to expect of us. Furthermore, we believe that substantial savings will be realized due to fewer lawsuits and an improved company position when lawsuits are filed.

“...we are very close to implementing a program that will guarantee our employees full arbitration before a panel of other employees – in any and all disputes within the company.”

Job security: The second program under development is concerned with maintaining employment. Job security is uppermost in employees' minds, especially these days in the wake of extensive plant closings by corporate giants in the steel and automobile industries. The traditional scenario for adjusting to a severe turndown in a large company is for the division managers to proceed on their own in an effort to maintain budgeted profits. That often means reducing inventories, laying off employees and closing selected plants if necessary. This is not a responsible, equitable or acceptable procedure in our society. Therefore, every company should establish a policy on the maintenance of employment. A maintenance of employment policy must take into account such issues as:

- Extent and length of time employment levels should be maintained beyond those required for maximum efficiency

- Closing selected plants or spreading the work to share adversity
- Amount of severance pay to those laid off
- Extent of retraining and supplemental unemployment assistance
- Long term effort to create sources of new jobs

In considering these and other issues, I am not suggesting an unlimited or unilateral commitment by Control Data. I'm calling for a cooperative approach involving Control Data, the government and communities. The approach is too complex to describe in detail now, but I would like to outline the essence of the approach. It is based on the values of a job to the federal government, the community and the company. These values differ. Surprisingly, they have never been established, in part I suppose because of the complexities involved; but they *can* be arrived at accurately enough for all practical purposes. For example, studies made by Control Data and an independent consulting company show that on average the value of a job to the federal government is approximately \$30,000 a year because of reduction in government payments and the economic gains caused by higher levels of employment. In addition to that figure, the investment required to *create* a job must also be considered. Of course, the investment varies depending upon the industry and the nature of the job, but the data is generally available.

Use of job values: The essence of a cooperative approach to maintaining employment based on job value can be communicated in the following scenario. Federal and state tax credits would be allowed to a company commensurate with the investment required to create jobs in any given plant and the number of years the jobs would exist. Tax credits would then be accumulated in a reserve to be used when the time arrives to replace some or all of the jobs; the fund could be used to create new jobs or to retrain employees for existing jobs. Another source of funds would be provided by the community in which the plant is located in a reserve built from local taxes commensurate with the value of the same jobs to the community.

Small enterprise would be the source of most of the new jobs needed by displaced workers. Therefore, the community would also establish the necessary organizations required for a cooperative effort to foster the startup and profitable growth of small businesses on a continuing basis.

Obviously, changes in the tax laws will be required to create the necessary incentives and reserves to implement the system I'm describing. Legislation should also be enacted which requires a social impact analysis for any contemplated plant closing or major employment cutback. The format would be similar to Control Data's pre-merger analysis and would include a financial statement for the local community which clearly sets forth the operating profit and loss and balance sheet for the plant. In the case of a plant closing, the statement would help the

community understand the legitimate business reasons for the action and would also enable the community to consider alternatives, including keeping the plant in operation.

“In the case of a plant closing, the statement would help the community understand the legitimate business reasons for the action and would also enable the community to consider alternatives...”

Since I have written and spoken extensively elsewhere about the system for maintaining employment, I will only add here that we are actively pursuing the concept at community, state and federal levels. Control Data is moving ahead with implementation to the fullest extent possible. For example, facilities are being established in or near each Control Data plant to help foster the startup and growth of small business. Discussions are also underway with leaders in several communities regarding the actions that they need to take in consonance with Control Data.

Finally, the program that I have outlined is fair because it is a dedicated innovative and cooperative effort to address maintaining employment.

EMPLOYEE'S CONTRIBUTION

Having reviewed Control Data's investment in the partnership, I will now address the employee side of the partnership equation.

Foremost, of course, is the employee commitment to performance improvement through enhancement of job skills by acquiring necessary education and training. Also important is training in human relations and awareness of the implications of performance to the individual employee, the company, community and country. Unfortunately, most individuals do not fully grasp the grave consequences of substandard achievements. This can be taught, however, through the use of case studies illustrating the adverse effects of remissions in performance for every type of job. In other words, each employee studies cases involving his or her own position.

Every employee is expected to devote at least a specified minimum amount of time to education and training to acquire needed job skills. Degree of participation and level of achievement in training is a major criteria in determining increases in pay. Every person knows the gaps to be bridged to improve his or her own performance. Therefore, employees are expected to take the initiative to identify education and

training which may be most useful, in addition to that recommended by the company.

Commitment to performance improvement: In addition to acquiring needed education and training, each employee is expected to participate to the fullest practicable extent in performance improvement activities such as Involvement Teams. Involvement Teams, as you probably know, are small groups of people voluntarily meeting regularly to identify and analyze causes of problems, recommend their solutions to management and, where possible, implement the solutions themselves. This method of operation is similar to the one developed in Japan. Wide usage of the Involvement Team is being made in Control Data not only in manufacturing, but also in a growing number of professional and clerical areas.

Commitment to long-term development: Another aim is a long-term employment commitment to the company. In other words, we want and expect each employee to stay with us, and we make sure that each employee knows that. Yet, it is not the intent to categorically equate the interests of an individual against those of a large company. When a mismatch of interest occurs in spite of best efforts, then an employee decision to resign is a positive event with the door left open to rejoin the company. In fact, the company will provide reasonable assistance,

“...where an employee wishes to start a small company, Control Data will provide consulting assistance, including help in developing a business plan.”

if needed, in making a change. One example is where an employee wishes to start a small company. Control Data will provide consulting assistance, including help in developing a business plan. As an aside, I should mention that this policy has been highly rewarding in a number of respects. Some of our most valued employees are those who once left the company and returned. With respect to starting small businesses, there are an average of about 15 employees per month seeking assistance. Only about 10% actually do it, the remainder deciding it's not for them, thus resolving a nagging uncertainty about leaving to start one's own business.

One more point needs mentioning on the employee side before moving on to another aspect of performance improvement. This is to emphasize that there is no inference in anything said thus far that Control Data employees are reluctant to participate. Quite the contrary. Surveys show that our employees assess themselves as being less produc-

tive than they are capable of being or want to be. They identify some of the reasons and the actions they see that would be helpful in improving their performance. The degree of motivation to improve performance isn't quantifiable, but it is present.

"...surveys show that our employees assess themselves as being less productive than they are capable of being or want to be."

This observation tracks with a recent Conference Board survey which showed that 80% of the workers, in the 5,000 households contacted, expressed satisfaction with their jobs and indicated dedication to their jobs.

MOTIVATION

At this point, I should emphasize that the major source of motivation in the approach I am talking about is to be derived from the satisfaction of having the required skills and in doing a good job, whatever that job is. Required skills, of course, are provided by the necessary education and training. Further, good performance is primarily rewarded through merit pay increases and promotions – all in a caring environment. Hence, the company is helping each employee to have a rewarding life that is matched by a conscientious employee response.

Special recognition programs are not built into the approach and long-term success does not depend upon them, in part because the values people place on specific results vary widely. Job security is of foremost importance to some, money is paramount to others, and then again there are those who equate success at work with social acceptance. Given those differences, it isn't practical to design an effective company-wide method of recognition. This does not preclude special programs from time-to-time; in fact, they are encouraged whenever there is an appropriate occasion such as an extraordinarily severe competitive problem or quality problems with a product.

JAPAN

Lurking in the background in any discussion of performance improvement is Japan, Inc. Yankee ingenuity is being challenged as never before. Hence, no presentation would be complete without some reference to the industrial surge by that country.

Much of Japan's success is commonly attributed to a work force that is more productive. A higher level of worker performance appears to

have its roots in Japanese culture. The Japanese have a stronger sense of community and a weaker sense of individual strivings than the American culture. This culture difference is particularly observable in the work place where competition between Japanese workers is almost unheard of, although there is competition between companies.

Lack of competition among workers helps them strive as a group to produce quality products in a timely way. A seniority system reinforces lack of competition. Workers receive pay increases primarily because of seniority, not because their contribution has been exceptional.

Japan's system of "lifetime employment" also contributes to Japanese companies' performance, though it is not available to all workers. Lifetime employment encourages the workers to behave in a way that is most beneficial to the company because the worker's future is with the company. If the company succeeds, the lifetime worker will thrive as well.

In addition to lifetime employment, large Japanese companies provide a variety of employee services such as subsidized housing, transportation, health care, child care, educational and recreational programs.

Japanese management practices also differ from those in the U.S. in that they are more participatory. In fact, the Involvement Team concept mentioned earlier and popularized by Japan is based on American concepts of participative management. The Japanese simply made it

"The differences in management as well as the Japanese work attitude and paternalism of large companies being synonymous with Japanese culture are not transferable intact to America..."

more effective. Since there is a plethora of literature on Japanese management, I won't dwell on it further, except to add that the differences in management as well as the Japanese work attitude and the paternalism of large companies being synonymous with Japanese culture are not transferable intact to America. Although a complete adoption by the U.S. is neither practicable, nor desirable because of culture differences, we can modify our practices in these areas to an extent to profit from their success.

There are three areas, however, where the U.S. could benefit greatly from adopting Japanese practices: a higher level of employee educa-

tion and training; more cooperation within industry and between industry and the government; and taking a longer term view in industry.

Education and training: In education and training, the Japanese system of lifetime employment has facilitated the greater use of on-the-job training than in the U.S. With more assurance that an employee will be around, a company is taking little risk in making large investments in training and retraining. As mentioned earlier, a vast step-up in employee education and training is essential in the U.S. Fortunately, this can now be done effectively and for much less cost through the use of computer-based education. Even so, it is still desirable to protect that investment by promoting a caring environment so that employees will want to stay.

Cooperation: While a better trained and highly motivated work force is an important factor in Japanese industrial success, the most significant one is technological innovation. The Japanese system, or Japan, Inc., as it is often referred to, has the distinguishing features of cooperation within industry and between industry and the government. The government provides planning and guidance in selected industries and the longer range view is taken of the innovations required. Government subsidies are provided for research and development and individual company efforts pooled in the early stages of development in selected industries.

“...the relationship between industry and government is more adversarial in nature than cooperative.”

In contrast, in the U.S., there is little cooperation among companies, and the relationship between industry and government is more adversarial in nature than cooperative. This situation must change dramatically if the U.S. is to compete effectively with the Japanese, because industrial innovation is pivotal. Without the innovations embodied in capital, equipment, processes and methods, and innovations that create new products and services or improvements in existing products and services that most efficiently meet the needs of society, even the most highly motivated and skilled work force cannot produce competitive outputs. The most dramatic evidence of this is the proliferation of Japanese cars on our streets and highways. U.S. cars are not as fuel-efficient and hence are not as competitive. This is the result of inadequate levels of innovation and bad decisions by the management of U.S. automobile companies. Even stellar performance by U.S. auto workers will not make up for management remissions.

EVALUATION

Having broadly sketched Control Data's approach to performance improvement and noted the lessons to be learned from the Japanese, it is time to talk more about tangible results.

The major benefit has been from improvement of employee skills with PLATO education and training at far less cost than that of traditional types. PLATO was introduced in 1975. Although usage has increased substantially each year, the level is still far short of what is required. Cost has been decreasing. In 1975, it averaged about \$7.00 per hour. Today it is less than \$2.00. Comparable traditional types of education and training average \$18 to \$75 per hour. The higher end is the cost for training away from the plant and includes time away from the job and travel costs. Travel is minimum with PLATO training.

"PLATO . . . cost has been decreasing. In 1975, it averaged about \$7.00 per hour. Today it is less than \$2.00. Comparable traditional types of education and training average \$18 to \$75 per hour."

Many specific examples of the effectiveness of PLATO training can be cited. One is in maintenance of customer equipment. Through the use of two recently developed training courses, a cost reduction is being achieved in customer engineer training of approximately \$700,000 per year.

Our professional consulting services division has deleted 25 days of classroom training for new computer programmer analysts. These have been replaced by 19 days of PLATO training resulting in incremental improvement in the training content as well as a cost savings of \$5,000 per student.

Evidence of the effectiveness of PLATO for basic management training has been established through evaluation studies. One evaluation was made by recording outcomes on employees supervised, and it is seen that after basic management training, superiors were able to deal with issues more satisfactorily in their performance appraisals of subordinates.

These results, along with a vast amount of other experience, provide us with great confidence that enormous improvements in employee skills can be achieved with the much greater versatility, power, quality, accessibility and economy of PLATO.

The only other bottom line addition that I will mention is that derived from EAR. Annually, the results of this service are evaluated, including savings in turnover, absenteeism and medical costs, for example. The savings exceed the costs of the program many times. They are growing as usage increases. A conservative estimate of annual savings exceeds \$10 million. Dwarfing the cost savings are the immeasurable but real benefits to the well-being of employees and their families. Since EAR was introduced six years ago, 31,000 employees or family members have used this service.

CONCLUSION

On that note, I will conclude by saying that the United States can improve productivity growth and regain its former competitive position in the world. To achieve these goals requires a new business culture in America. We can begin to see the outline of it in Control Data. It is based primarily on greatly expanded innovation, greatly expanded investment in human resources, caring, and an employee-company partnership.

"The United States can improve productivity growth and regain its former competitive position in the world. To achieve these goals requires a new business culture in America . . ."

Innovation required is that which provides the new products and services that meet the major unmet needs of society, including humanistic innovation which enriches peoples lives.

Investments required in the enhancement of human resources include vastly increased education and training to improve employee skills and to teach the benefits to all of a consistently high level of performance.

Caring includes a cooperative approach with the government to put in place the most practicably equitable system for maintaining employment. Caring also includes the use of company resources in an equitable manner to help employees to help themselves in solving the problems of everyday living.

All of this in a partnership where each employee has a strong commitment to a sustained level of conscientious performance.

The resources to achieve our goals are within our grasp. Workers want it. The reality of it awaits the initiative of the management of corporate America.