

## MINUTES OF THE SENATE COMMITTEE ON EDUCATION

The meeting was called to order by Chairperson Dave Kerr at 1:30 p.m. on February 9, 1995 in Room 123-S of the Capitol.

All members were present except Senator Lawrence

Committee staff present: Ben Barrett, Legislative Research Department  
Avis Swartzman, Revisor of Statutes  
Brenda Dunlap, Committee Secretary

Conferees appearing before the committee: Anthony L. Redwood, School of Business  
University of Kansas, Lawrence, Kansas

Others attending: See attached list

Education has two objectives: to prepare people for the world of citizenship, and the world of work. The business world is undergoing dramatic change. Companies are downsizing, merging and once great companies are struggling to survive. Change is being driven by forces over which American business has no control. It is operating on an old model that worked for the last sixty years, but is no longer viable in the global market we are entering. Thus, we are in a transition to a new model of business. The problem is that public policy and supporting infrastructure (including education) is oriented to the old model, not the new one. As business is forced to change, how must the education of students change to remain competitive? We need to have a closer relationship between government and the private sector.

The mass production model with the assembly line and large scale of production is no longer successful. The average workers then were high school dropouts with average literacy and basic skills. This worked as long as domestic markets were our only competition. Business had no interest in the education process because workers had the skills they needed. It was said "There is no connection between the world of school and the world of work." Also, there was no interest or support for skill training in public education. Management was paid to think; workers were paid to do what they were told.

The new model is called the high performance work organization (HPWO). It was developed for the following reasons: the global market now has the most influence on the business environment; we are undergoing the most rapid technological change in history; knowledge goes electronically around the world in seconds; and the consumer is more sophisticated and demands higher quality products. The focus of production is value added, customized, high quality products, and created by a production process that achieves continuous improvement. The distinguishing characteristics of the HPWO model include flatter organizational structures; commitment to quality; customer orientation; flexibility in product development and process operations; and workers organized in teams, empowered, cross trained, and responsible. Training is a key investment strategy, broadened to include technical and soft skills as well as basic job skills; worker input and commitment is sought; and compensation is based on individual and group performance.

People and technology are the most important resources to change and improve business performance. The increase of technology in the work place can only be fully effective if the work force is capable of using it. It is evident that the work force of the future will need an education and skill level vastly different from that which currently exists. Public policy, management philosophy, the orientation of education and training must all change. The challenge is to develop an education and training system that will underpin the global competitiveness of American industry.

As firms reorganize the work place and operations in pursuit of productivity gains and sustained competitiveness, the resulting demand for skilled workers will pose fundamental choices for human resources management. They will find increasingly over time that workers will need to be treated as an irreplaceable and contributing asset. They will be compelled to be part of the societal effort to upgrade both entrants and the existing work force, and to do so with three partners - the education and training sector, other firms with like

## CONTINUATION SHEET

MINUTES OF THE SENATE COMMITTEE ON EDUCATION Room 123-S-Statehouse, at 1:30 p.m. on February 9, 1995.

skill needs, and its employees. Kansas business will not be competitive unless we develop a world class K-12 education system, an effective school to work transition, and an adult education and training system. This preparation should lead to one of four desirable outcomes for an individual student: A) Preparation for entry to work through high school graduation that is competence based (K-12, diploma); B) Preparation for a vocational career (VOCPREP) through a joint school based-work based continuum (K-10,11-13, H.S. diploma, Voc certificate); C) Preparation for a professional career through a TECH-PREP continuum (K-10, 11-14, H.S. diploma, associate degree). D) Preparation for university (K-16, degree).

Basic education must meet the following criteria to serve future work force needs: 1) It must be benchmarked to world standards; 2) It must be oriented to meet the twin objectives of citizenship and work force participation; 3) It must be competence, not time based, and convey meaningful standards; 4) It must embody the development of skills needed in the work place at entry, and a foundation for lifetime learning as skill needs evolve; and 5) It must include systematic exposure to and awareness of the world of work to underpin career choice. None of these criteria are presently met in most education jurisdictions.

In the school to work transition, 50% of students go to college, and of those, 50% actually graduate. So, 25% are actually graduating from college. Add to that the 10% of students that go to a technical training school and 35% are prepared to enter the work force. The other 65% are unprepared for the difficult world they are entering.

Both employers and workers face great difficulty when skill obsolescence occurs and the education foundation of employees is sufficiently weak that retraining becomes too costly for both to countenance. This problem will compound in the future as the basic education foundation and technical skill needs increase under competitive pressures, creating an expanding education and skill gap. Firms do not have the capacity to respond to this skill gap internally, nor to pay for external help, relative to the growing magnitude of the deficiency. Nor will the public sector have the resources to develop a system response additional to that proposed above in relation to entrants. The only viable solution is one based on a shared responsibility on the part of firms, individuals and the public sector, that depends on the capacity of an expanding career preparation system for work force entrants. Technical and community colleges must be given an expanded mandate and incentive to provide adult remedial education and retraining.

The employability of the marginal work force is in further jeopardy as the education and skill gap continues to widen, on the one hand, and the employment and training system is incapable of an effective response, on the other. The "system" comprises an eclectic set of independent uncoordinated programs that are largely ineffective in responding to the long term needs of the marginal work force. The programs are largely federal, and the source of the problem is their categorical nature. The addition of state programs, also legislated piecemeal, has compounded the overall ineffectiveness of this system.

The forces for change in the global economic environment are compelling and the transition of American enterprise to the high wage/high productivity model in response is inevitable. The human resources implications for individual firms are profound and the public policy challenges for states are huge, given the paradigm shift involved from a mass production to a high performance work organization model.

The state response must necessarily be multifaceted in nature. Its goal is nothing less than a change of mind-set on the part of employers, employees, educators, and others, from the old to an uncertain new. Public policy must be supportive of productivity growth, employment creation, management-labor cooperation, and investment in human capital on the part of both firms and individuals. But most of all, the state must reform its education and training system to provide a competitive work force with world class capabilities. (See Attachment 1)

A motion was made by Senator Jones to approve the minutes of the February 7, 1995 meeting. Senator Walker seconded the motion, and the motion carried.

The meeting was adjourned at 2:30 p.m.

The next meeting is scheduled for February 13, 1995.

# SENATE EDUCATION COMMITTEE COMMITTEE GUEST LIST

DATE: 2-9-95

NAME	REPRESENTING
Karla Altom, LPN	LCC Nursing, Parsons, KS
Craig Grant	KNEA
Jon Jossuand	KU
Alberta Dewitt	NCCC
Boyanne Ballard RN	Lawrence Mem. Hosp - KSNA
Pat Baker	KASB
Paula Andrew	Butler Co. Comm. College
Terrie Brattell	Butler County Community College
Kathy Bailey	Dodge City Com. College - Nursing
Shenie Cole	Osceola State Hospital
Karen Guesnel	Dodge City Comm. College - Nursing
Lelelie Nalke	Dodge City Comm College - Nursing
Debbie Zlab	DECC
Ann E. Hamson	KSBE
C. Keith Gunderson	Leadership Garden City
Merle Hae	KACC
Don Rye	Kaw Valley 321
D. Apt	KACC
ALAN COBB	KAAVTS

# SENATE EDUCATION COMMITTEE COMMITTEE GUEST LIST

DATE: 2-9-95

NAME	REPRESENTING
Stephenie K Wright	Sumner Academy
David J Lunn II	Sumner Academy
Jean M. DeDonder	Emporia State Univ.
Diana Gjerstad	USD 259
Tommy Redwood	KU
<del>Stephanie Aken</del>	Bethel College Nursing
<del>Debbie Pappas</del>	Bethel College Nursing
Carolyn Bowker	Bethel College Nursing
Michael Massey	SRS Workforce Development
Cynthia Cole	Stormont-Vail
Judith Beck	KU
Cindy Crabtree	KU
<del>Jo Benson</del>	Baker U.
Kelly Barclay	NCCC - Chanute
Zandi Aultman	NCCC - "
Shannon Corcoran	Baker University - SON
Delanna DeWitt	Baker University School of Nursing
Shirice Blake	CC
Shellie Collins	CC - Parsons, KS

**DRAFT FOR COMMENT**

**The Future Competitiveness of American Industry:  
Human Resources Issues and State Policy Options**

**Anthony L. Redwood  
School of Business  
University of Kansas**

**Paper presented to the Center for Workforce Management Seminar  
Series, Spring 1995.**

**February, 1995**

*Senate Education  
2-9-95  
Attachment 1*

Profound change is occurring in the way American business operates. This change is being driven by compelling forces in the socioeconomic environment that are structural rather than transitory in nature. We can characterize the way American business operated in the past, albeit successfully, as the "old" way, the mass production system that generated standardized products of reasonable quality that competed in the domestic market on the basis of cost. In contrast, the "new" way, necessitated by these new forces, will be based on some version of the high performance work organization concept and competition will be in a global market on the basis of superior quality and customization as well as cost.

American firms are in various stages of transition to some version of the "new" system. Many large enterprises, usually urban, are well along the way; others, particularly small and medium firms, and mostly rural, are lagging. In one way or another, the process of transition from the "old" to the "new" has been underway throughout the business sector for the past decade, and is accelerating. Those that lag will not survive.

All our laws, institutions, management philosophy, resource development and public policies, comprising the support infrastructure, were formulated and are still geared to the "old" system. This includes the education and training system. This support infrastructure, the policies and institutions that facilitate and constrain business operations, has not changed in response. It has not yet grasped the necessity for change. It is still oriented to the "old" way. Until it does change, until it becomes oriented in support of the "new" way, the competitiveness of U.S. industry will be compromised, held down by the dead weight of inertia and resistance to change.

While the support infrastructure contains many elements, one of the most crucial in underpinning future competitiveness will be a competent work force. Currently, policies and practices in relation to human resource development are oriented totally to the "old" way. This misorientation will assume disaster levels unless it is rectified. This paper seeks to explain the problem and its multiple dimensions, the issues that States need to address and the major policy options open to them, relative to the status quo, in responding to this challenge.

## THE COMPETITIVENESS OF AMERICAN INDUSTRY

A firm is competitive if it is able to produce and sell products in the market over a period of time at prices that generate a satisfactory return to stakeholders. The many factors that influence the firm's capacity to do this can be grouped as follows (Fig. 1);

- A. The environment in which the firm operates. This has two dimensions, namely (A1) forces in the external environment that the firm cannot control or influence, but which it must adapt to; and (A2) public policy parameters that support (tax incentives), regulate (OHSA) and constrain (antitrust) the firm.
- B. The way the firm itself operates (B).
- C. The resources that the firm draws from society, including its (C1) human capital, (C2) financial capital, (C3) technology and knowhow, and (C4) infrastructure support, including telecommunications.

The necessary conditions for competitiveness can therefore be stated as

1. A supportive business environment, particularly public policy.
2. A business strategy that responds to the market.
3. Access to adequate, high quality resource inputs to production.

In the long run, all three conditions must be met for a country to sustain long term competitiveness. This occurred for the United States for most of this century, until recently when it became apparent that major competitor countries have been more successful in adapting to change than has the United States (Thurow, 1992). Slower productivity growth in the 1970s and 1980s and the recent ten year slide in the value of the U.S. dollar are clear indicators of the problem. Why was U.S. industry competitive in the past, and what is needed for it to be competitive in the future?

### The Mass Production Model

The mass production system evolved early in the century and reached its zenith in the United States in the decades following the Second World War. It represented a successful adaption to the primary forces of

that time, namely a large market, mostly domestic competition, mass consumption demand, and steadily evolving technology. As well, public policies were oriented to support or constrain this system. For example, labor relations law minimized work place disruption and industrial conflict; antitrust law kept domestic competitors on an even footing in the market; regulatory impositions, employment law and mandates on employers affected competing domestic producers equally; Keynesian fiscal and monetary policies ensured strong demand and production near optimum capacity levels; and trade policy supported domestic producers.

The twin pillars of the system were the assembly line and the large scale of production. Driven by scientific management, often called Taylorism or the Taylor model after its originator, the focus was on maximizing efficiency by determining the one best way to perform work tasks. "Very large investments in complex and expensive machinery, designed to be operated by people with minimal skills, could turn out standardized products in profusion at very low unit costs" (Marshall and Tucker, 1992). Productivity gains were derived from two sources, namely, economies of scale, and a focus on producing a standard product through repetition. This meant infrequent product changes and long process cycles, long production runs, specialization in equipment, and simplification and routinization of work tasks (Appelbaum and Batt, 1994).

Additional characteristics of mass production included hierarchical management structures, command and control management philosophy and supervision, and rigidity in operations. The criteria of bare adequacy applied to quality and customer service, to keep costs low. Workers were accorded minimum responsibility, limited on-the-job training specific to the task, precarious job security over the business cycle, and compensation levels consistent with cost minimization. Unionization flourished to mitigate the worst of these human resources features.

In terms of resources, business received from society what it needed. Large societal investments occurred in physical infrastructure such as the interstate highway system to support raw materials and product distribution. Steady technological innovation occurred in the university systems that benefitted business product development. And most importantly for our focus, the public education system provided an ample



availability of workers educated adequately for the semiskilled needs of industry and trainable to the routine tasks demanded of them.

There are, however, several profound consequences of this model in terms of its foundation for underpinning human resource needs of the future:

1. As long as business was able to access an adequately educated worker, which it did until recently, it took no particular interest in the education process. Not only has no business-education nexus or partnership developed, a somewhat typical phenomenon in other competitor countries such as Japan and Germany (Marshall and Tucker, 1992), but worse still educationalists have proceeded with their mission uninfluenced and increasingly ignorant of the needs of industry as these have evolved over time. In the United States today "there is no connection between the world of school and the world of work" (Nothdurft, 1990).

2. Through task routinization, and by treating labor as a variable cost and expendable, the business sector deemphasized skill development. This is reflected in its lack of investment in training, other than that of the managerial cadre, relative to competitors. Worse still, this philosophy spilled over into a lack of interest and support for skill training in public education, so that today technical and vocational education has become the proverbial stepchild of the education system. American industry does not train, and has not supported public training.

3. The worker became nothing more than an interchangeable part in the mass production process. A command and control philosophy created an adversarial relationship between management and workers. There has been in consequence a lack of partnership, of trust, of respect. The notion is that management is paid to think, workers simply to do as they are told. This entrenched philosophy represents a significant barrier to the capacity of U.S. firms to transition to models of a cooperative work place with a highly skilled and empowered work force.

#### A "New" Mode of Production

Rarely can success continue in any endeavor without adaptation and change, and so it is with American industry due to major changes in the environment in which it operates. As indicated in Figure 2, the

preeminent force in the business environment has become the global market. The level of competition is now greater, and competitor firms produce in contexts that have better resource endowments, different perceptions of the role of government, and differing comparative advantages.

Second, this is the era of the most rapid technological change in world history. The consequence is faster product development, shrinking process cycles, and an expanding capacity for customization and response to diverse consumer interests. Third, the rapid emergence of information technology has greatly expanded the scope for replication of production techniques, particularly for the more standard technologies, throughout the world. Lastly, market opportunities have not only grown with globalization, but have also become more segmented with growing consumer sophistication, and its discerning emphasis on quality and diversity.

In essence, the marketplace has become larger, segmented, discerning, and fiercely competitive, not only in relation to price, but also on the basis of quality and customization. Furthermore, these changes are not transitory, but permanent. In more and more instances, foreign firms have become competitive in the markets for standardized products through lower wage-productivity ratios than U.S. firms can sustain domestically in the long term with that form of production. Increasingly, the mass production model has been unable to sustain competitive advantage for U.S. firms, and the imperative for change in management, production and operations has become increasingly recognized and responded to.

The predominant response to date has been to "tweak" or "extend" the mass production model (Applebaum and Batt, 1994). Some refer to this as the lean production model. The focus of this model is on cost reduction through downsizing, the substitution of technology for labor, the use of technology for more centralized coordination and decision making, better management, and other efficiencies. While this may work in some sectors, there is a growing consensus that the scope for additional cost savings is subject to diminishing returns, and that competition on the basis of price alone will be inadequate, for an increasing portion of American economic activity.

Increasingly, U.S. firms are moving to an alternative model for competitive advantage based not only on cost, but also quality and customization. Drawing on a variety of approaches overseas, this model combines principles of teamwork with decentralized decisionmaking by a skilled work force. The focus of production is value added, customized, high quality products, created by a production process that achieves continuous improvement. The diverse array of approaches by firms to this mode has been characterized as the high performance work organization, or HPWO, model.

The distinguishing characteristics of the HPWO model include flatter organizational structures, commitment to quality, customer orientation, flexibility in product development and process operations, and workers organized in teams, empowered, cross trained, responsible. Training is a key investment strategy, broadened to include technical and soft skills as well as basic job skills; worker input and commitment is sought; and compensation is based on individual and group performance.

Many larger, some medium, and few small firms are in transition towards some version of the HPWO concept. Most, particularly smaller rural enterprises, are not. Major obstacles to change, aside from short run survival while making the change, have been identified as outdated adherence to the principles and culture of mass production, short time horizons, inadequate R and D, failures of cooperation among stakeholders, a continuing domestic market orientation, and most significantly a neglect of human resources (Dertouzos et al., 1988). In short, the mindset is a captive of the past.

The transition to this model has profound implications for resource inputs and infrastructure, and elevates two resources to priority importance, namely human capital and technology/innovation (C1 and C3 in Figure 2). The latter has become a priority focus of state economic development strategy, with a major emphasis on applied research, technology transfer, entrepreneurship of technology oriented firms (C.3) and complemented by support for seed and venture capital (C.2)(Redwood, 1992). This has been complemented by changes in national technology policy and funding. For its part, business is recognizing that R and D expenditure can no longer remain low and discretionary, nor focus predominantly on product development (Dertouzas et al., 1988).

A compelling point from the perspective of human resources, however, is that the ratcheting up of technology in the work place can only be fully effective if the work force is capable of using it. In simplest terms, basic techniques like statistic process control require certain levels of mathematical comprehension, and basic literacy just to be implemented. As the level of technological sophistication rises with competition, so must the education and training underpinning. Put another way, the ability of technology development to sustain U.S. industry at the cutting edge of product and process development could be severely constrained by the inadequacy of the work force itself.

It is evident from the above that the work force of the future will need an education and skill level vastly different from that which currently exists. With respect to education, the level will be higher, it will need to be oriented to underpin the needs of the work place, and it must provide the foundation for skill growth. The array of skills per worker will be broader, involving the addition of technical skills, the capacity for technical flexibility, and soft skills relating to teamwork, problem solving, communications, leadership and the like. For entrants to the work force, technical and vocational competence will be demanded of a much greater proportion than is currently the case. For the existing work force, which will constitute the bulk of the future work force for several decades, "old dogs" will need to be taught "new tricks." For those displaced by skill obsolescence, or handicapped by a poor start, or destined by other obstacles to marginal employability, the gap could become too large unless the response involves major remediation for sustained participation in the work place.

#### THE POLICY CHALLENGE FOR THE STATES

It is clear from the above that the challenge for the states is not one of finetuning a currently effective system of work force preparation, nor of some leisurely paced and discretionary pilot schemes to find the path. Rather the task is to orchestrate a permanent change in human resource development and utilization. Public policy, management philosophy, the orientation of education and training, must all change; and yet, all are captives of their past and orientated to that past. The overriding policy issue is how to develop consensus support for a multifaceted strategy in the face of massive resistance to change on the part of entrenched

interests. The challenge is nothing less than to develop an education and training system that will underpin the global competitiveness of American industry.

More specifically, that strategy must, relative to the status quo, address the following crucial dimensions (Fig. 3):

1. How can public policy mandates and impositions affecting the work force and work place be modified and molded to support rather than constrain American firm competitiveness (Fig. 3,A)?
2. How can the state support and accelerate this process of change of attitude and practice of American management towards human resources development and utilization (Fig. 3,B)?
3. How can the public education and training system become reoriented to serve the twin objectives of preparation for the world of work as well as the world of citizenship on the part of new entrants to the labor force (Fig. 3,C)?
4. How can the state and the private sector effectively collaborate to retrain and upgrade the existing work force, and ensure the employability of persons on the margin of skill and opportunity (Fig. 3,C)?

These dimensions are not independent, but interdependent. All must be addressed.

## POLICY OPTIONS

### A. The Business Environment

The formulation of public policy affecting human resources must necessarily be guided by its impact on:

- 1) Worker productivity;
- 2) Job creation or substitution by employers; and
- 3) Cooperation or conflict in the work place.

The most prominent example of public policy affecting individual worker productivity is that of high marginal income tax rates when federal and state levels are combined. However important other purposes are in imposing this tax structure, including revenue development and equity in tax burden, the downside can be significant, and exponential, in its impact on worker motivation and incentives to strive and improve.

Similarly all taxes based on employment units or payroll not only add to unit cost, but also create powerful incentives for employers to substitute technology for labor. As well, it encourages employers to substitute overtime and engage in other labor saving approaches (Buechtemann, 1993). In the future economic environment of mobile capital and knowhow, the largest effect will be on the physical location of economic activity, as employees move facilities to avoid such impositions.

The MIT study Made in America (Detouzas, 1988) articulated the adversarial nature of American business relationships, with other firms, with the government, with suppliers, and with its employees, and postulated that whatever basis this had in the past environment in which business operated, it would not be sustainable in the future. Study after study have identified a distinguishing feature of the most successful competitor countries as being the cooperative and collaborative relationships with stakeholders, including employees, and the effectiveness of a partnership approach in many of these relations (Thurow 1992, Marshall and Tucker 1992).

One implication for the future is that avenues have to be developed for cooperation. At the state level this could include networking and partnership for technology development and joint venturing, for the development of skill pools in the work force, and joint consultation on the part of employees and employees for work place change. There are numerous examples of such initiatives in state economic development strategies.

In order to reorient public policy to a supportive business climate states must consider the following:

1. Reassess and reorient all policies that affect employment in any way for their impact on worker productivity, job creation, and employer-worker cooperation; and
2. Embed human resources development as a priority element of a state's economic development strategy.

#### B. Firm Management, Production and Operations

American firms do not train at all, or do so on a limited basis on the job in relation to the specific skills needed by each employee. Such expenditure has been treated as an expense, because of its short term

orientation, and has been restricted in scope because of cost minimization. As the skill level is low, it is easily replaceable when business conditions dictate labor shedding. As well, a primary fear of employers has been the potential loss of employees trained by the firm to non-training firms. Further, the option of moving the physical facility in the face of work force skill inadequacies in a particular location becomes viable if past training outlays are low.

However rational these past employer practices may have been under the mass production model, they are no longer viable under the high performance work organization concept, where a skilled work force is the competitive advantage of the future. As firms reorganize the work place and operations in pursuit of productivity gains and sustained competitiveness, the resulting demand for skilled workers will pose fundamental choices and responses for human resources management:

1. Can the employee continue to be treated as an interchangeable part of the production process, as a short run expense to be written off, or as an irreplaceable and contributing asset? For most firms, and increasingly over time, the latter choice will dominate and investment in the work force will be necessary, inevitable, and potentially large.

2. Given the necessity for this investment, can the firm do this on a stand alone basis or is there an imperative for the firm to be part of a broader scale effort? Stand alone is costly, and however effective in the short run, it is not sustainable in the long run because of its impact on costs. Consequently, most employers will be compelled to be part of the societal effort to upgrade both entrants and the existing work force, and to do so with three partners--the education and training sector, other firms with like skill needs, and its employees. Fundamental questions then relate to how this might be done effectively and to how the cost is distributed between the public and private sectors.

3. Does the firm retain the option to relocate on each plant reinvestment cycle in pursuit of favorable wage-productivity ratios, and thus avoid retraining and upgrading outlays? The answer is yes if and only if the firm continues the production of standard quality homogeneous products on a relatively low wage-low

productivity basis, inevitably overseas. Otherwise investment in the human capital of its work force is a necessary condition to stay in business.

4. Can the traditional, dichotomous status of management and workers be continued in the reorganized work place of the future based on a skilled work force? Clearly, this perception is inconsistent with the HPWO concept. While it may take many forms, it is clear that employees will be included among primary stakeholder groups in the enterprise of the future.

Human capital theory indicates that firms should pay for the training of employees specifically related to the operations of the firm, while society and individuals should pay for training that is related to general competence (Becker, 1975). For a firm to have a competent, skilled work force, it must apply its specific training to employees endowed with appropriate education levels and generic skills, technical and otherwise. Over time this general skill endowment and specific skill complement must rise with technological advances in work processes.

These principles then must guide public policy in responding to the choices that result from the above:

- A. Firms will not survive without continual upgrade of skills in the work place.
- B. Firms will therefore be compelled to invest in their employees human capital.
- C. The effectiveness of this investment will depend on the foundation of education competence and generic skill training provided to work force entrants by the public sector.
- D. Firms cannot afford to bear the cost of remedial and upgrading on their own on a sustained cost-benefit basis, but will need help.

The dilemmas for public policy is that most firms have a mindset based on the past, and as yet do not recognize the need and its basis. Further it is universally recognized that the education and training system is inadequate and misoriented relative to the task of providing capable entrants, and virtually nonexistent with respect to adult training. And firms have no history of cooperation with each other or with the education establishment to influence or leverage the response. Small and medium size firms are particularly



disadvantaged in recognizing and responding to these challenges of work place reorganization and related skill development.

Where should the primary emphasis of public policy be--on "fixing" those dimensions for which it is responsible, namely, the education and training system, or on committing its resources to influence and incentive employers to do what they need to be doing. However important the latter is, the fact is that effectiveness in the latter is totally dependent on the former, that is, it would be to no avail if the underlying foundation in education and training is not remedied. For this reason, it is argued that the primary emphasis of public policy should be developing an education and training system that serves future work place needs, and this will be developed below.

In relation to influencing firm behavior however, there are several categories of policy options that states can consider:

1. Carrot/Stick One approach is to mandate that firms must engage in a certain level of training, for example, spend two percent of sales on it, and contribute any shortfall to a training fund (e.g., France). Another is to provide tax incentives (credits, enhanced deductibility) for training in desired circumstances, e.g., in transitioning to HPWO form of operation.

The advantage of such measures is that they create awareness and response on the part of employers earlier and greater than would otherwise occur. The disadvantage lies in the cost to the state of incentives and in the case of mandates, government intrusion and the dysfunctional employment effects noted previously.

2. Partnerships Firms cannot go it alone, and cannot sustain a reactive stance to its needs. To get what it needs, business must influence and mold the education and training process. To be effective it must do so on a collaborative basis, with fellow users of labor and with those that develop it. This means that from the state strategy down to local/regional level, public-private sector interface and cooperation must be established in the form of partnerships, consortia and networking. Again, this may necessitate mandates (on the education establishment) and incentives (on firms to "associate") to initiate what should ultimately develop on the basis of mutual interest.

3. Assistance Numerous federal and state programs exist to support small business development. Examples include technology transfer (NIST, states), small business management and finance (SBA), and export assistance (states). Because they are categorical in origin, these initiatives tend to operate independently, with limited networking. However, in association with a rationalization of service delivery to such firms, effective technical assistance to support the transition of small firms to the high wage/high skill model of work organization could be fostered (Jobs for the Future, 1992).

C. Public Investment in Human Capital

The key dimensions of the public role in underpinning the competitiveness of American industry can be identified as (Fig. 3,C).

1. A world class education K-12 system.
2. An effective system of school to work preparation and transition.
3. A market-driven adult education and training system.

The basic premise of public policy must be that there are three, not two, primary stakeholders in the overall education and training system, namely, the individual, society, and the business sector. The focus of the system should be on the preparation of the individual student to be a contributing member of society.

This preparation should lead to one of four desirable outcomes for an individual student:

- A. Preparation for entry to work through high school graduation that is competence based (K-12, diploma).
- B. Preparation for a vocational career (VOCPREP) through a joint school based-work based continuum (K-10,11-13, H.S. diploma, Voc certificate).
- C. Preparation for a professional career through a TECH-PREP continuum (K-10, 11-14, H.S. diploma, associate degree).
- D. Preparation for university (K-16, degree).

## Basic Education K-12

From the perspective of this paper, basic education must meet the following criteria to serve future work force needs:

1. It must be benchmarked to world standards.
2. It must be oriented to meet the twin objectives of citizenship and work force participation.
3. It must be competence, not time based, and convey meaningful standards.
4. It must embody the development of skills needed in the work place at entry, and a foundation for lifetime learning as skill needs evolve.
5. It must include systematic exposure to and awareness of the world of work to underpin career choice.

None of these criteria are presently met in most education jurisdictions.

## Career preparation through school to work transition

The arithmetic of the current system is simple. About half of high school graduates enter university studies, and about half of these graduate. If about five percent of the remainder complete vocational and technical programs at the technical institutions and community colleges, then about thirty percent of the work force is certified at some recognizable standard of competence; and about seventy percent are not.

Again, the basis for the past will be totally inadequate for the future. By any standard the technical, vocational and career preparation arm of the education and training system is its stepchild. It has been perceived in poor light by potential students and by their parents, largely ignored by employers, and accorded low funding priority by the state. These attributes will need to be reversed if the United States is to have a competitive work force.

To do this, public policy must be oriented to a basic approach that embodies the following ingredients:

1. Each school district, in consortium if necessary, provides a curriculum, course offerings, and support structure that would allow students to progress towards all four desired outcomes upon high school graduation.

2. A continuing program of systematic exposure to and awareness of the world of work, through such devices as curriculum content, career days, work place visits, shadowing parents, and the like, is commenced at 7th grade level or lower.

3. Commencing at the 8th or 9th grade level, each student formulates a plan of study that will lead to one of the desired outcomes (work force entry as a H.S. graduate, VOCPREP, TECHPREP, or college entry). This plan is for guidance, is revised annually, is seamless (no barriers to switching), and moves from general to specific as career goals develop.

4. Firms, on an individual basis as well as through consortia and networks at the region/local level, provide commitment and tangible support for TECHPREP and VOCPREP programs, through sponsorship of apprentices and internships, equipment augmentation, input to curriculum development, hiring preference for graduates, etc., in addition to career awareness activities noted above.

This approach to an effective school to work preparation and transition system has the supreme virtue of developing a sense of purpose for attending school. As well, for the student, it would provide the opportunity to match potential and interest with viable options, and an ultimate outcome of broader opportunities in the work place and higher earnings. The employer will gain an employee who can add value to the organization and enhance its productivity, in that the employee is more competent on entry, can absorb on the job training more readily, enhancing the return on the employer's training outlays, and has a greater capacity to handle rapidly changing technology.

### **Adult Remediation and Retraining**

Both employers and workers face great difficulty when skill obsolescence occurs and the education foundation of employees is sufficiently weak that retraining becomes too costly for both to countenance. This problem will compound in the future as the basic education foundation and technical skill needs ratchet up under competitive pressures, creating an expanding education and skill gap.

Some dimensions of this problem area were discussed above, particularly in terms of influencing the employer response to it through mandates and incentives. The question that was not addressed is the role and

responsibility of the public sector in dealing with this problem, particularly in this regard where as a generalization the training of an employed work force is the responsibility of the employer. Furthermore, the problem is compounded by the fact that education and training system is overwhelmingly oriented towards youth and work force entrants, while the problem work group with the skill gap can be characterized as middle aged.

Fundamentally, firms often do not have the capacity to respond to this skill gap internally, nor to pay for external help, relative to the growing magnitude of the deficiency. Nor will the public sector have the resources to develop a system response additional to that proposed above in relation to entrants. The only viable solution is one based on a shared responsibility on the part of firms, individuals and the public sector that "piggybacks" on the capacity of an expanding career preparation system for work force entrants.

In essence technical and community colleges must be given an expanded mandate and incentive to provide adult remedial education (that is work force related) and retraining. One approach is for state funding of such institutions to be tiered according to the relative costs of technical training in occupational fields and perceived skill needs (e.g., Illinois). For employed workers, arrangements for cost sharing can be devised to the mutual benefit of the training institution and employers, based for example on the distinction between generic skill development and firm specific learning. While customized training subsidized by the public sector under the rubric of economic development has sometimes been productive (IPPBR study of KDOC, 1990), it is necessarily limited in scope due to cost, and ultimately must be replaced by a system response based on the training infrastructure, guided by a local/regional business-education partnerships and driven by common business needs identified by consortia of firms.

### The Marginal Work Force

The employability of the marginal work force is in further jeopardy as the education and skill gap continues to widen, on the one hand, and the employment and training system is incapable of an effective response, on the other. In reality, the so-called "system" comprises an eclectic set of independent uncoordinated programs that are largely ineffective in responding to the long term needs of the marginal work

force. The programs are largely federal, and the source of the problem is their categorical nature. The addition of state programs, also legislated piecemeal, has compounded the overall ineffectiveness of this system (Stella et al., 1994).

The policy option is clear, namely major modification to an effective system. Planning and experimentation for this purpose is underway in many states, federally funded, and based on consolidation of programs, their implementation at the ground level through the One-Stop Career Center concept, employer involvement and state responsibility. The model of the future will emerge from the lessons learned from these experiments and from the lengthy experience of Canada with the one-stop service concept.

### CONCLUSION

The forces for change in the global economic environment are compelling and the transition of American enterprise to the high wage/high productivity model in response is inevitable. The human resources implications for individual firms are profound and the public policy challenges for states are huge, given the paradigm shift involved from mass production to high performance work organization model.

The state response must necessarily be multifaceted in nature. Its goal is nothing less than a change of mindset on the part of employers, employees, educators, and others, from the old to an uncertain new. Public policy must be supportive of productivity growth, employment creation, management-labor cooperation, and investment in human capital on the part of both firms and individuals. But most of all, the state must reform its education and training system to provide a competitive work force with world class capabilities.

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Fig. 1

# FACTORS AFFECTING THE COMPETITIVENESS OF ENTERPRISES

## *A HOLISTIC OVERVIEW*

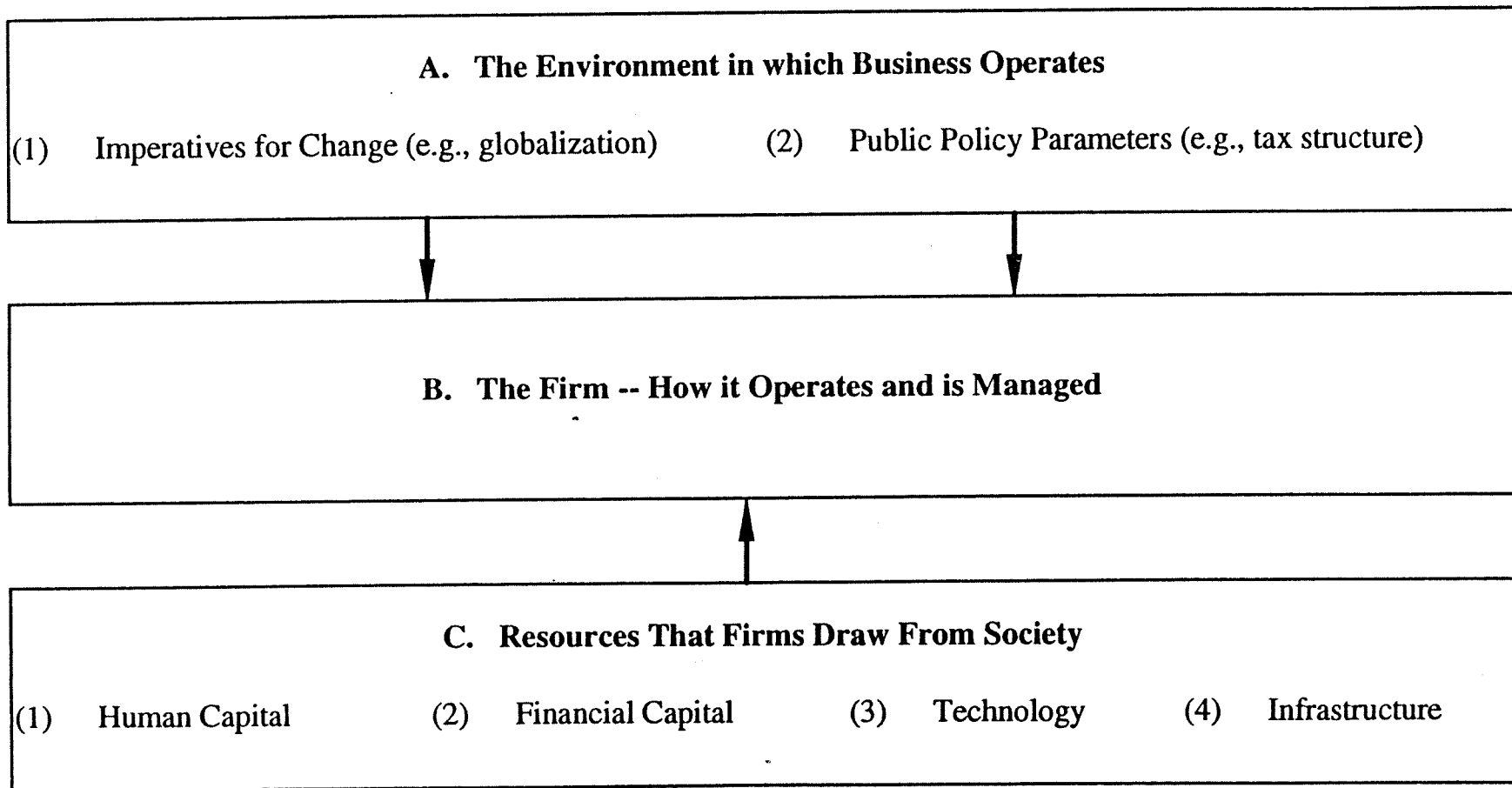




Fig. 2

1-21

# THE FUTURE COMPETITIVENESS OF U.S. INDUSTRY THE KEY FACTORS

## A. Business Environment

### (1) Imperatives Forcing Change

- E.G.
- The Global Market
  - Rapid Technological Change
  - Rapid Diffusion of Knowledge
  - Consumer Sophistication

### (1) Public Policy Parameters

- E.G.
- Tax Code
  - Labor Relations Law
  - Antitrust Law
  - Employment Law
  - Regulatory Environment
  - Technology Policy
  - Fiscal, Monetary, Trade Policies



## B. The Firm -- Management, Production, Operations

Mass Production -- Extended

OR

High Performance Work Organization



## C. Resources -- The Key Inputs to Production

### (1) Human Capital

- EG.
- Basic Education
  - Career Preparation
  - ✓ Professional
  - ✓ Vocational
  - Adult Employability
  - ✓ Training
  - ✓ Re-training

### (2) Financial Capital

- EG.
- Seed
  - Venture
  - Mezzanine
  - Export

### (3) Technology/Innovation

- EG.
- Basic Research
  - Applied Research
  - Technology Transfer
  - Entrepreneurship

### (4) Infrastructure

- EG.
- Telecommunications
  - Road system, etc.

**THE FUTURE COMPETITIVENESS OF U.S. INDUSTRY  
HUMAN RESOURCES DIMENSIONS**

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**A. BUSINESS ENVIRONMENT/PUBLIC POLICY**

THE KEY CONSIDERATIONS INCLUDE IMPACT OF POLICY ON:

1. Productivity and cost.
2. Employment creation or substitution.
3. Culture of cooperation or conflict

**B. THE FIRMS MANAGEMENT OF PRODUCTION & OPERATIONS**

**I. The Basic Choice:**

1. High performance (HPWO) vs. Taylorism (Mass Production Model [MPM])

**II. Human Resources Choices for Employers:**

1. The notion of the employee as an interchangeable part, as an expense (MPM), or as a contributing asset, an investment (HPWO).
2. The employer as an autonomous, micro-unit in the labor market (MPM), or as a contributing user of a human resource pool (HPWO).
3. The employer relocates periodically in search of lower labor costs (MPM) or commits to developing a stable, skilled work force (HPWO).

**C. PUBLIC INVESTMENT IN HUMAN CAPITAL**

The Key Dimensions Are:

1. World Class Basic Education K-12
2. An effective system of school to work preparation and transition
  - a. Directly to work as a competent H.S. graduate
  - b. Vocational/technical education (VOCPREP)
  - c. Career preparation (TECHPREP)
  - d. Professional education (university)
3. Market-Driven Adult Training
  - a. Training and re-training by employers
  - b. Training and re-training outside the workplace
  - c. Employability of the marginal workforce

# HIGH PERFORMANCE VS. TAYLOR

HIGH PERFORMANCE	TAYLOR MODEL
<b>CUSTOMER SERVICE</b>	
<ul style="list-style-type: none"> <li>■ Customers see and know team members and talk often</li> <li>■ Fellow workers think of each other as customers</li> </ul>	<p>Customers see only sales staff</p> <p>Workers have no "customers", only bosses and co-workers</p>
<b>QUALITY FOCUS</b>	
<ul style="list-style-type: none"> <li>■ Comprehensive quality control: Often use SPC, applied at all levels</li> <li>■ Most workers trained to conduct own quality control programs, including SPC</li> <li>■ Committed to continuously improving product quality</li> <li>■ Long term relations with suppliers</li> </ul>	<p>Quality control usually done only at end of production process</p> <p>Only engineers, quality experts understand and apply SPC or other quality controls</p> <p>If it isn't broke, don't fix it</p> <p>Buy from supplier with lowest price</p>
<b>WORKER RESPONSIBILITY</b>	
<ul style="list-style-type: none"> <li>■ Teams produce whole products</li> <li>■ Workers are cross-trained to do all team member tasks</li> <li>■ Workers rotate jobs</li> <li>■ Teams order own materials, set production goals, schedules</li> <li>■ Teams hire new workers</li> <li>■ Teams may halt production</li> <li>■ Workmanship standards set to match best in the world</li> </ul>	<p>Workers see only parts, components</p> <p>Workers responsible only for their discrete task assignment</p> <p>Workers do only assigned tasks</p> <p>Workers use only materials given; work on assigned schedules</p> <p>Personnel departments hire workers</p> <p>Only foremen may shut down lines</p> <p>Standards set to the lowest common denominator</p>
<b>STRUCTURE</b>	
<ul style="list-style-type: none"> <li>■ Flatter organization with fewer or no middle managers</li> <li>■ Workers organized in teams, each with own equipment</li> <li>■ Workers are co-located</li> </ul>	<p>Vertical organization with many layers of management</p> <p>Workers function singly, in mass production/assembly line setting</p> <p>Workers separated into departments</p>

## HIGH PERFORMANCE

## TAYLOR MODEL

### FLEXIBILITY

- Custom orders easily done; team structure and broadly skilled workers are flexible
- Firms able to develop and introduce new products more often
- No need to stockpile basic parts—products made to order when the customer orders them
- Practices JIT delivery, achieves major cost savings

- Rigid assembly lines, narrowly skilled workers cannot respond to work order changes easily
- Long lead times and high expense required to develop new products
- Must stockpile basic parts in case of a production shutdown—leaves firm with inflexible inventory
- Short production runs too costly for assembly line/mass production system

### TRAINING

- Training workers seen as key investment strategy
- Training provided in teamwork communications, leadership, basic skills, problem solving, quality control

- Training limited to management and white collar workers
- Training usually only by vendors on equipment operation

### MANAGEMENT PHILOSOPHY

- Workers should be trusted
- Fewer rules, job classifications
- Workers help set policy, mission, rules, and production goals
- Workers propose equipment and training investments
- Kaizen systems set up to promote/reward worker ideas

- Workers will do only minimum
- Many rules, job classifications
- Only management sets company policy, rules, production goals
- Limited access to top manager; technology drives acquisitions
- Employee ideas not solicited; no solicitation systems established

### COMPENSATION, SECURITY, EVALUATION

- Pay based on knowledge and skills
- More salaried workers
- Employee ownership programs and profit sharing common
- Labor viewed as an investment
- Evaluations used to raise quality; not usually tied to promotions

- Pay based on seniority
- More hourly workers
- Few employee ownership or profit sharing programs
- Labor seen as a variable cost
- Evaluations linked to promotions, pay

Table format adapted from OTA Report, "Competing in the New International Economy, 1990."