

Remarks by
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External Factors Forcing Change on
Education: How can they work for us?

I am very pleased with the opportunity to make some remarks at this second National Conference on Science and Mathematics Education Reform. Every participant here this morning is committed to change; each of you understands the need for systemic reform; and each of you has a genuine desire to help America and its children grow in intellectual achievement. I can only admire your efforts and urge you to persevere with your difficult task. Despite my disadvantage in knowing a lot less about education than anyone in this room, I hope that I can offer some small contribution to your deliberations.

My knowledge has been improved recently by the opportunity to visit two schools from my own congressional district that are part of the California Statewide Systemic Initiative (SSI), called the California Advocacy for Mathematics and Science or CAMS. I will comment on some of the things I observed on that visit later in my remarks.

However, I would like to focus my remarks largely on some of the external factors that are forcing changes on education. I have therefore titled my comments, External Factors Forcing Change on Education: How can they work for us? First, however, I would ask you to reflect for a moment on the term "educational reform." This term is so common in our discourse that it has become "mental boilerplate." If, however, we pause to consider each word for its genuine meaning, I believe we can discover a guiding principle for our work.

Education means drawing out of you what is already in there, not merely instilling something new. Thus our task must be driven by the recognition that each person comes to education with potential drawn from his or her own singular qualities, gifts, experiences, and culture. Our job is to help a child tap that potential so it can be utilized in meaningful pursuits. It will never be enough to ask -- What should children in eighth grade science or math be required to know? -- and then prepare to offer up those skills or meanings. It will be just as important to "draw from" and "draw out" the unique perspective through which each child views his or her own world.

The term reform means to amend or improve by change. Since reform must necessarily take place in a dynamic, ever-evolving society, we must recognize reform as a process, rather than a movement which has a beginning and an ending. To be successful, reform must be continuous, not end-stopped. We can never think of any reform as permanently fixed or finished. Instead, we must hunker down to a long-term task that will outlive the leadership and participation of all of us in this room, and will be passed on to our younger proteges, and then to their younger proteges. This should not be interpreted as a gloomy judgement of our prospects. Rather, it should be recognized as the natural process that reform should take.

In the language of TQM, or Total Quality Management, we call this Continuous Process Improvement, and it is essential to productivity

improvement in all human activity.

In religion we have the concept of the infinite perfectibility of the human spirit by transformation from within, which combines the concepts of both education -- to draw out from within -- and reform -- to change for the better.

If we can hold these two perspectives -- one on education, one on reform -- as guidelines, they will go a long way towards preventing both rigidity and atrophy in what we do.

Science and mathematics reform, or any educational reform, will be strongly influenced by many factors beyond the boundaries of education. I hope that by raising some of these issues with you that they will influence your discussions throughout the remainder of the conference.

Let me begin with a comment by Diane Ravitch, an historian of education and a visiting fellow at the Brookings Institution. In a recent article entitled, When School Comes to You, she writes, (quote) "Education does not develop autonomously; it tends to be a mirror of society and is seldom at the cutting edge of social change. it is retrospective, even conservative, since it teaches the young what others have experienced and discovered about the world. the future of education will be shaped not by educators, but by changes in demography, technology, and the family. Its ends -- to prepare students to live and work in their society -- are likely to remain stable, but its means are likely to change dramatically." (End quote) Ravitch is speaking here of institutional education, or schooling, as Illich uses the term in his book, "De-Schooling Society," not self-education which can be far more radical.

I believe she is right. This does not disparage the critical role of education and educators in preparing the conditions for change, but it does signify that education and educational reform serve best when they are responsive to the evolving larger context. This may sound simple enough to be insipid, but much of what we are struggling to change in American education today remained cemented in place despite a vastly changed context over the last 50 years.

Since society is always in a state of flux -- dynamic and transforming -- we must be alert to change the means by which we educate, despite the fact that the ends, to live and work in society, are likely not to change, as Ravitch reminds us. This substantiates the concept of reform as a continuous process that I mentioned earlier.

Let us consider the three realms -- demography, family and technology -- where identifiable change is occurring that will have impact on education.

In demography, Judith Waldrop, the research editor of American Demographics tells us that, (quote) "By 2010, married couples will no longer be a majority of households. Asians will outnumber Jews by a margin of two to one, and hispanics will lead blacks as the nation's largest minority. ...by the year 2020, immigration will become more important to U.S. population growth than natural increase (the growth that occurs because births outnumber deaths). [at that point] the population will diversify even more rapidly." (End quote)

Historically, this nation's rich diversity has been one of its primary strengths. We should embrace that continuance. We should, however, pay attention to statistics that indicate a high drop-out rate in high school among hispanic youth, and also recognize that the percentage of hispanic high school graduates going on to college has declined since the 1970's. As our society becomes more multi-racial and multi-cultural,

we must be continuously vigilant not to leave any student behind.

There is also a tendency to use demographics as if they were solely reserved for cultural and racial trends. Perhaps the most significant and disheartening demographic information for our purposes was released last September in a comprehensive study of adult literacy in America.

It is frightening to realize that an estimated 90 million adults cannot figure out a Saturday departure on a bus schedule or write a brief letter describing a credit card error. The highest skill level documented in the study for these adults was the ability to figure out the difference in price between two items.

Demographic information has an important instructive role for educators, especially because the best reform should not be just improvement on what "is", but also anticipatory of what "will be." Education can be greatly informed by careful attention to such things as social change as reflected in our demographics. We know that demographers can be more confident about the direction of future change than of its magnitude. However, demographic shifts exert gradual but cumulative force on social structure, thus on social legislation and also budgets. Eventually, they reshape the nation's political agenda. If educational reform does not incorporate an awareness of changing demographics, the usefulness of the reform will be diluted or even overtaken by these external evolutions.

Let me move on to the issue of family change, raised by Ravitch as a factor for considerable impact on education. I have often commented that in the last fifteen years we have seen a disintegration of the American family structure. Likely, many of you would agree with me. I am surely in agreement with opinions espoused in the media, and with the ordinary citizen polled on the street. Well, guess what, many of us were wrong!

What is both fascinating and dangerous about this agreement is that despite the availability of accurate demographic data, we as a society create and perpetuate myths that completely contradict our information and historical fact.

I have made the comment about family structure based on both observations and current statistics. This combination leads to the further suggestion that there were "good old days" when families functioned as supportive units where children thrived, and all was well.

Stephanie Coontz, a professor of family history, recently published a book entitled, *The Way We Never Were*, and subtitled, *American families and the nostalgia trap*, in which she elucidates the family myth issue. Neither the author nor I am suggesting that there are not serious problems in American families today. However, she documents, and she has convinced me, that what we remember is more "the way we wished it had been", than "the way it really was."

For example, Coontz tells us, (quote) "Twenty percent of American children live in poverty today: at the turn of the century the same proportion lived in orphanages, not because they actually lacked both parents, but because one or both parents simply could not afford their keep. As late as 1960, after 10 years of low divorce rates, one in three children lived in poverty. modern statistics on child-support evasion are appalling, but prior to the 1920's, a divorced father did not even have a legal child-support obligation to evade." (End quote)

She goes on to point out that alcohol and drug abuse were also prevalent long before the "modern rearrangements of gender roles and family life." In fact, per capita alcohol consumption in the 1820's was almost three times higher than it is today. In addition, there was a

major epidemic of opium and cocaine addiction in the late 19th century.

This leads her to conclude, (quote) "There have been many transformations in family life and social relations in American history, but they have been neither as linear nor as unitary as many accounts claim. ...However, the historical record is clear on one point: Although there are many things to draw on in our past, there is no one family form that has ever protected people from poverty or social disruption, and no traditional arrangement that provides a workable model for how we might organize family relations in the modern world." (End quote)

My point in quoting Coontz so extensively is to suggest that if we view our current and genuine difficulties in American families as anomalous or as a vast departure from the past, then our instinct will be to try to reinvent a past that did not work, as solution to our current problems. To believe that we once had that solution in an old pattern will only thwart our freedom to recognize that no single pattern is the answer.

Our dependence on an old myth will stifle our ability to develop creative ways of dealing with the present. We will not change, nor should we, the trend of more working women. We will not make children safer in abusive households where parents do not divorce. We might, however, find that the many varieties of families that we have today will work better for children if their surrounding communities are accepting and supportive.

We might begin by envisioning our communities as the family unit where everyone -- the elderly, college students, the unemployed -- have a stake in the nourishment and success of others. Then the "family under one roof" becomes a subset of the community family unit.

For those of you, who like me, still hear a stubborn voice depicting a past idyllic time, let me clarify the dissonance. There is no question that America experienced a short period that we might recall as a "Golden Time" or a brief moment in Camelot. The years between 1945 and 1960 were clearly exceptional, albeit anomalous, for the nation. The gross national product (GNP) grew by almost 250 percent and per capita income by 35 percent. By 1960, 62 percent of American families owned their own homes. By the mid-1960's, nearly 60 percent of the population had what could be considered a middle-class income.

During world war II, Americans had saved at a rate three times higher than that in the decades before or since. Their buying power was boosted by the vast competitive advantage we had at war's end when other world economies were in virtual collapse. This advantage was enhanced by the role of the government which could suddenly afford to be generous with education benefits, housing loans, highway construction and job training. In this exceptional but temporary confluence of economic, social, and political factors, the 1950's family had more affluence, more options, and more satisfaction. This is the family that lived-on far beyond its time because it was memorialized and serialized in the movies and in that new invention called television. Let us suffice to say on this issue of family, that just as the economics of that short golden era did not last, neither did the many benefits that it brought to families linger on. Our task is to be cognizant of today's reality and open to diverse and perhaps untraditional solutions.

The third factor likely to change education and the very structure of our schools in the future will be technology. We are actually very glib about technology in America. That glibness, however, is not necessarily backed up by a genuine understanding of how technology can be used effectively to achieve desired outcomes. This has special implications for educational systems which will make increasing outlays to bring

technology into the classroom. The effort to acquire technology must be matched by an equal effort to provide comprehensive technology education for the teachers, or the exercise will be in vain. It is often students who are more facile with the equipment than their very instructors.

In many schools today, sophisticated computers are being used solely for word processing -- not much more advanced than a typewriter. If the use of technology does not enhance learning, it probably is not worth the expense to acquire it.

Lewis Mumford, one of the 20th century's most astute social philosophers, decried our fascination with "technology for technology's sake." He said, (quote) "Western society has accepted as unquestionable a technological imperative that is quite as arbitrary as the most primitive taboo: not merely the duty to foster invention and constantly to create technological novelties, but equally the duty to surrender to these novelties unconditionally, just because they are offered..." (End quote)

Mumford believed that the great bulk of technology has merely moved us from one place to another, not necessarily better or worse for the journey. We have a responsibility to consider this not only for the current technology available to schools but even more so with the advent of the information superhighway, which I strongly support. I admonish you to insure that every technology investment and usage for education genuinely advances learning.

If we have difficulty envisioning the diverse possibilities for present-day technology in our schools, logic suggests that we will have even greater difficulty anticipating the monumental changes it could have on the educational future of America.

Diane Ravitch poses this question. (Quote) "what will happen to school as we know it, if one can learn anything at a time and place of one's choosing?" (End quote) she speculates that the coincidence of this "Age of Technology" with the mass movement of women into the workforce, will transform schools into custodial institutions. In this transformation, teachers will become guides helping students thread their way through the new technologies and vast selection of data bases. I am not at all sure that the school/technology scenario will unfold that way. I do know that the reforms in education that we are formulating today are probably not even trying to anticipate schools on the information superhighway.

Perhaps an important component of any current reform should be the simultaneous development of an alternative reform-model using state-of-the-art technology. What I am most concerned about is that the exercise of reform not seek to change only the present but also try to anticipate the future. Without this cognizance, we will always be catching up instead of moving ahead.

I have talked today about demography, family, and technology as external factors that will change education in dramatic ways. Let me make a brief summary comment about each.

I urge you not to lose sight of the demographic landscape. It provides valuable pointers to tell us the directions in which we are headed. Demographics provide us one of the few tools to craft anticipatory reform.

On the issue of family change, we know from the real past, rather than the mythological past -- that no one family model to date has been able to insulate children from poverty or social disruption. We also know that much of what can be achieved in a school and in a classroom

depends upon what is happening outside that school, in its community, and on its streets. Despite the fact that no ideal family structure has emerged, we recognize that there are examples of highly successful and supportive communities in our midst where families of diverse incomes and backgrounds have flourished. Just as we have learned to search the nation for successful models for teaching, for building concepts, and designing curricula, let me also suggest that we search the nation for community models to imitate or learn from. Our communities are our larger families, but many of them stopped functioning as units that provided a social infrastructure for individual families long ago. It is difficult and often inappropriate to intervene in the personal life of a specific family. It is, however, both reasonable and right to identify successful community models that protect and nourish families. We ought to be able to develop a registry of these communities to be used as a resource. Our goal should be to create new family traditions and find ways to revitalize old community traditions. Our success in this endeavor will necessarily be piecemeal, but it has the potential to weave a new fabric across the nation.

For technology and education, the goal must always be how to enhance learning through technology. Today approximately one-third of major U.S. Corporations provide basic skills - training for employees. U.S. Industry as a whole spends about \$25 billion yearly on remedial education. Businesses spend as much on remedial math education as is spent on math in schools and colleges.