

GLOBALIZATION, EDUCATION AND KNOWLEDGE FOR DEVELOPMENT

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Summary

Globalization is a set of complex processes, which interact with local contexts. This makes understanding difficult, despite globalization's long history. Furthermore, globalization is a human and therefore reflexive, rather than a "natural" process, which makes prediction unfeasible if not impossible [Soros, 1998 #899]. The variety generated by globalization is best met by increased variety in response. This makes information and knowledge increasingly important. The knowledge that is useful, however, is that which helps shorten reaction times and improve short-term selection processes, rather than that which is used to forecast the future [Hamel, 1998 #900].

The current organization and technology of mass education is based on principles of standardization and centralized control. In a turbulent environment, however, the most effective systems are those which are simultaneously highly differentiated and highly integrated [March, 1999 #901]. Fortunately, the conceptual models required for an appropriate new organization and technology of education are available and experiments are underway. This is an appropriate time to begin the re-design of national education systems.

Globalization

The processes called globalization include five major flows or movements, which interact with each other. The movements are of:

1. People within and across national boundaries, as workers, refugees and as tourists. These people bear but are not the sole source of
2. information, understood today as data in the form of scientific reports, news broadcasts, statistics, documentary films and videos. The flow of information is also greatly facilitated by the spread of
3. new technologies, of communication, but also of production and distribution. These technologies have contributed to radical changes in the organization of the work place and standards of living, and in the distribution of wealth. New technologies have also permitted an incredible flow of
4. financial resources, in daily volumes that exceed the total annual product of most countries of the world and which are beyond the control of any government. Facilitated by new technologies, but associated with tourism and migration and capital flows, there is also a great movement across cultural boundaries of
5. images and ideas, carried in television programs, videos and films, music, books and magazines and, of course, conversations and formal speeches.

Globalization Not a New Phenomenon

These movements are not in themselves new phenomena. The history of humanity is one of movements, of my ancestors from beyond the Caucasus, of the Jews into the land of Canaan, of Baltic sailors across the seas, carrying and acquiring new technologies and information, timber and gold and incense, and especially images and ideas. And as people moved and populations grew, new forms of social organization appeared, families organized into clans, clans into tribes, tribes into nations, nations into nation-states and empires. These territorially bounded organizations were often accompanied and sometimes dominated by others with a more global perspective, some who were imperialistic, others who defined themselves on the basis of shared belief.

World trade and the development of science began at least as early as the 16th century, when European vessels carried goods back and forth to all corners of the world, spreading ideas and beliefs and knowledge along the way. By the end of the 19th century the pace of invention had led to a geometric rate of increase in the production of energy, an explosion of technological power so rapid that the American Henry Adams worried what would become of insignificant humans. His autobiography records a trip to the Paris Exposition of 1900, and his sense of subjection in the Hall of Dynamos.

"[I] began to feel the forty-foot dynamos as a moral force, much as the early Christians felt the Cross...this huge wheel, revolving within arm's length at some vertiginous speed, and barely murmuring...One began to pray to it; inherited instinct taught the natural expression of man before silent and infinite force."

Negative Impacts of Globalization

At the same time, globalization had negative effects on social and political institutions. While it made possible increased migration, economic growth, and democratization, it also entailed:

- colonization of most of the world;
- armed conflict of increasing global scale and capacity for destruction;
- extinction of cultural as well as natural species;
- the founding of first national and then transnational private organizations powerful enough to escape control of national governments; and
- in this century, international organizations granted powers that appear to constrain national sovereignty.

Many economic historians, although impressed and gratified by the vertiginous technological advance of today, believe that the changes of the 19th century were on a grander scale. Most of the innovations of the end of the 20th century, they claim, are an extension of the technological leaps made 100 years earlier. The threats and opportunities posed by globalization may be more intense today than ever, but they are not qualitatively different than they were at the end of the 19th century. For the immediate future, much can be learned by studying globalization's past.

The Emergence of the Modern School

Adams was not the only person mesmerized by marvelous developments of science and industry. Some of the innovations, which allowed factories to produce mass quantities of high quality goods at relatively low prices, also were implemented in the creation of national education systems. Like factories schools were organized according to detailed specifications that sought to standardize the behavior of teachers and students.

The factory model was highly successful everywhere it was fully implemented. Most people my age are products of education-as-schooling, and we have done well. Initially it trained managers and highly skilled workers, later it socialized great numbers into the discipline and compliance required for mass production in factories.

The evidence is now clear, however, that continuous and accelerated globalization has reduced the perceived effectiveness of schooling as a technology of education. To explore this assertion, let us first review the essential elements of schooling as the dominant technology of education in the world.

The provision of mass education beginning in the 18th century was made possible through:

- 1) the development of a formal curriculum, with knowledge distinct from that available through other sources of learning;
- 2) structured instructional materials which carried the curriculum;
- 3) special training for persons in use of the materials and in discipline;
- 4) grading of students by age and/or ability; and
- 5) the construction of special places for learning.

This new technology of education reduced dependency on hiring as teachers persons with extensive personal knowledge and interpersonal skills. Now relatively young, inexperienced (and less expensive) persons could be employed to teach relatively large numbers of children. Schools, and in some countries universities, were organized much as were the factories that had appeared only shortly before. Although in all industrialized countries mass education followed rather than preceded the onset of industrialization, schooling provided large numbers of persons with those minimal skills and work habits that reduced labor costs. And schooling improved the ability of workers to learn new production techniques designed by management.

The Impacts of Globalization on Schooling

At the same time globalization was spreading schooling around the world, however, it also was acting to reduce its effectiveness as a technology of education.

1. Flows of People. Emigration has had three negative effects on schooling. These are particularly acute today.
 - First, those most likely to migrate have been among the most schooled of their countries, but not the most schooled in the countries to which they went. Migration simultaneously lowers average education levels in the sending society and in the receiving society.
 - Second, in the receiving countries, in-migration has increased the diversity of the student population, making more difficult the schools' task of integration.
 - Third, the ease with which corporations can relocate makes it increasingly difficult for school systems to anticipate labor market demands.
2. Flows of Information. The information transmitted in schools has grown increasingly different from that transmitted by other sources. In most countries, the divergence originally occurred as foreign mass media replaced national media. But even in those industrialized countries rich in education and mass media, there is a growing gap between the content of schooling systems and the mass media. This divergence has grown as public and private institutions that exercise control over the media have diminished in influence.

3. Flows of Technologies. Students can learn as much from the traditional technologies of schooling, print and talk, as they do from electronic technologies. But what they learn is different and the new technologies are more engaging than the average teacher.

Electronic technologies are now spreading around the world. Children already spend several times more hours per day watching television than they do listening to teachers or reading books; access to computers will further diminish the impact of schools.

4. Flows of Resources. Globalization has been a major contributor to the decline in public willingness to finance state school systems. Increased mobility, of families and of firms, lessens loyalty to local institutions. International organizations have promoted reduced state control of education, recommending decentralization and privatization. Employers increasingly rely on in-plant training; in the United States the total of corporate spending on training now approaches total spending on public schooling.
5. Flows of Ideas and Images. The heroes of the world's children no longer are those taught about in school, but instead come from books, magazines, films, videos and television. For most of the world, the images are from the United States. Schools everywhere are criticized for their failure to counteract the values the media transmit. Even in the United States where television programming originates, the values these heroes espouse are not the values taught by schools.

The net effect is a global reduction in the capacity of schooling as an instrument of social integration, as a producer of the social capital that economists increasingly recognize as important for development.

In many countries the popular perception is that the quality of education has declined. These perceptions are in most cases mistaken. Curriculum is increasingly based on careful research, instructional materials are vastly improved, teachers are more highly trained, class sizes are smaller, schools are better equipped. A more reasonable explanation is that global competition has increased demands on schooling beyond what schools can reasonably meet.¹

Demand for Schooling on the Increase

Ironically, while the processes of globalization act to reduce perceived effectiveness of schooling as a technology of education, they also have contributed to expanded demand for schooling. At least three factors have contributed to the worldwide expansion of demand for schooling. First, as the average level of schooling in a population increases, so too does the amount of schooling an individual must attain in order to stand out from other individuals. In the United States, for example, salary levels for post-secondary schooling have increased while those for high school graduates have remained steady or have declined [Murnane, 1996 #902]. The "inflation" of the currency of schooling is independent of the actual skill requirements of specific occupations or social tasks. More schooling is required simply because everyone else has more.

A second factor increasing demand for schooling is increased uncertainty about what values, skills and knowledge will best serve student and society. Increased flows of people and knowledge and ideas and technologies make it more difficult for students,

parents, and curriculum writers to anticipate what content will best prepare for the future. The solution is to expand the range of offerings to reduce risk [Brown, 1997 #894].

Demand for schooling also has expanded because of changes in the composition of the economy. Better-paid occupations in manufacturing previously located in high income countries are being shifted to lower income countries. New job creation in high income countries has been proportionally greater in those sectors which traditionally pay higher salaries, such as finance and electronics. Employment in these sectors is small relative to total labor supply, however. High starting salaries draw many more applicants than openings, which allows employers to select those with higher levels of schooling, further inflating demand.

These phenomena are seen clearly in the State of Massachusetts, where I am now. Massachusetts has a population of about 8 million, a labor force of 3.2 million. In the past 10 years the State has enjoyed a high rate of economic growth; its unemployment rate is below 3 percent, and household incomes are among the highest in the United States. It is the home of about 100 universities including Harvard and MIT, and after the Silicon Valley of California the leading state in technological advances. Education is a critical industry in Massachusetts, where more than 70 percent of high school graduates receive some form of post-secondary education. There is constant pressure on schools to increase offerings in science and mathematics, and there is declining support for vocational education and training.

This one-sided approach to education ignores the reality of how economies and labor markets function. Even if finance and electronics and medicine are leading sectors of the state economy, they provide only a fraction of the total domestic product. And, they employ only a fraction of those who must be educated to contribute to overall economic growth. In the 10 years between 1996 and 2006, for example, the economy of Massachusetts will create through job replacement and growth about 1.1 million job openings. Only 3 percent of the openings will require schooling beyond university; only 31 percent will require at least a university education. More than 54 percent of the job openings will be in occupations that require high school or less, 36 percent will be in occupations that require no more than one month of training [Division of Employment and Training, 1998 #895]. A similar phenomenon is seen in Switzerland, where until recently 60 percent of the age cohort 16 to 19 received apprenticeship training and only a small fraction attended university. In order to distinguish themselves from non-European migrants now arriving in large numbers, Swiss youth are opting out of apprenticeship and into higher education, irregardless of the relevance of that education for jobs available [Metzger, 1999 #898].

Summary

In sum, globalization has changed the social and economic context in which schools were designed to operate. Schools serve an increasingly diverse student population which reduces the efficiency of fixed instructional content and practices. Schools increasingly compete with better-financed, and more entertaining, sources of knowledge and values. Stakeholders that previously did not participate in decision making for education are now making demands schools are ill-equipped to meet.² Nearly every country in the world is engaged in a costly and politically difficult process to fix the existing school systems: there is no evidence that any of the school reforms underway will make a significant difference in outcomes.

The Promising Future Ahead of Us

Henry Adams was not the first, and obviously not the last, to feel we have gone about as far as we could or should go. Today we too are disoriented by continued globalization and its consequent expansion of knowledge of each other, a knowledge that challenges the frameworks and models and theories and paradigms so carefully constructed to make sense of our world. The paradigms that have worked so well were constructed to what we knew then, but this is now, and our paradigms are seen in some cases as wrong, in all cases as incomplete.

What I have described is what is happening, but not necessarily what had to happen or necessarily what will happen in the future. We stand on the threshold not just of a new millenium but also a new phase of history yet to be written, yet to be made. And today, as in other periods of human history, we are busy constructing new paradigms, new explanations of our reality and its possibilities, that will be used in the construction of new social organizations. Some believe that the transformations ahead of us are at least as great as those that accompanied the Industrial Revolution.

The new paradigms are a source of understanding for three aspects of our lives: how we think and know and consequently how we learn and teach; how we transform the world to meet our desires; and how we govern ourselves. These are inseparably entwined, each influenced by and influencing the other, but it is useful to look at them separately. Perhaps easiest to describe is the emerging new paradigm for production, or how we transform the world.

The New Paradigm for Production

Already underway is a fundamental shift in thinking about organization for production. Major corporations are turning away from the factory or assembly line paradigm of the late 19th and early 20th century, toward a paradigm sometimes called "flexible production". This new paradigm calls for changes in the relationship of worker to work, worker to worker, and worker to consumer.

1. Worker to Work.

The reorganization of production during the Industrial Revolution gained a one-time increase in productivity by capturing the knowledge of skilled craft workers, and converting that knowledge to rule-driven routine production processes controlled by management. Flexible production, on the other hand, seeks to stimulate continuous improvements in productivity by giving workers (greater) control over production. Technological improvements made by workers during the production process turn out to be as significant as those resulting from design changes by engineers and scientists. Learning while doing and doing while learning builds knowledge, skills and values distinct from those required to follow management [Economic Commission for Latin America and the Caribbean [Economic Commission for Latin America and the Caribbean (ECLAC), 1992 #138; Womack, 1990 #314].

2. Worker to Worker.

In the new organization of production, decision-making is carried out by groups given control over the production process in return for responsibility for meeting objectives. Workers are less specialized and require a broader range of skills. Training is most often collective and wages are linked with group rather than individual performance.

Central to flexible production is the availability of information about all aspects of the process at all times. This information has to be widely circulated across levels and divisions to insure coordination. Transmission of information within firms is facilitated by emphasis on inter-personal relations, corporate culture, and training in communication skills.

3. Worker to Consumer

The re-integration of thinking and doing is across all sectors of the firm, from design of the product to marketing and distribution. Integration of these various elements of the organization makes it possible to bring designers and producers together with clients, shortening time to production and time to market, which both increases sales and reduces the need for large inventories. The integrated design-production-marketing system permits smaller "runs" in production and increases in variety in products. Production sites can be smaller, which brings workers and management and consumers in greater contact with each other [Oman, 1994 #236].

The emergence of the new paradigm for production is paralleled by construction of a new paradigm for education.

The New Paradigm for Education

The argument here is not that the parallels between schools and factories arose because schools were designed to produce industrial workers. Most people who went to school never worked in factories. Students were educated, as employers complained, with little concern as to the requirements of the work place. We can recognize, however, that those who built factories and those who built schools lived in the same culture, danced to the same tunes, read the same poets, and ultimately were influenced by the same grand metaphors. In the 19th and 20th centuries the prevailing metaphors emphasized progress through positive science, the accumulation of fact-based knowledge, individualism and social competition, and rule by experts or meritocracy.

In the future, most people will never work in occupations in which information and communication technologies are predominant. Most workers are not now nor in the future will be symbolic analysts or knowledge workers, even in Massachusetts. Most places of work will not conform to the requirements of the new paradigm for production; perhaps many will continue to distort the paradigm, using it to speed up workers rather than to innovate.

Even so, the attractiveness of the paradigm as myth contributes to efforts to shift education from the factory school model. Three factors are in play. First, the income differentials associated with particular kinds of education are increasing: for example, salaries for information technology occupations are high and rising faster than those for other occupations. The perceived rewards to this kind of education contribute to demands by parents and students to reorient the content and methods of schooling in general. The call is out to provide computer literacy to the world, even though half the globe's population has never spoken by telephone [Wei-mung, 1998 #905].

Second, the forces of globalization are breaking the monopoly on schooling held by governments and education professionals. The loudest new voices are from the high technology sector, but they are joined by other stakeholders in society, calling for the replacement of schooling with a new form of education. Some, reasoning from what they know, urge that the new education be based on the new paradigm for production.

Third, advances in cognitive psychology and epistemology have provided educators with a framework for a new model of teaching and learning. Most often called constructivism, this approach emphasizes the active role of learners, often working together, in construction of understanding of their reality.

Differences Between the Old and New Paradigms for Education

The new paradigm in education contradicts many of the essential features of the factory model of schooling ascendant in the 19th and 20th centuries, and parallels the new paradigm for production. The new principles are:

- Primary attention is given to teaching methods of learning.
- Teachers provide some direction to bodies of knowledge but place greater emphasis on applications.
- Teachers spend little time on instruction, most on facilitation of learning.
- Students spend most time on experiential learning: the priority is learning while working, and working while learning.
- Group learning is privileged over individual learning.
- Emphasis is on the diversity of perspectives that can be brought to solve problems, rather than identification of a single correct or best approach.
- Non-cognitive methods of expression are encouraged to stimulate creativity in the solution of "messy" problems, and to facilitate communication.
- All this includes changes in student assessment, away from measurement of knowledge to evaluation of performance.
- Attention to applications of knowledge increases inter-disciplinary work. Over time this leads to a blurring of disciplinary lines and the creation of new disciplines that are amalgams of present ones [Gibbons, 1994 #530].
- This kind of teaching and learning emphasizes construction of knowledge through action over discovery of existing fact. Purpose defines the value of knowledge, and subjectivity becomes as important as objectivity.
- Many different expressions of human intelligence are valued in cooperative effort in the home, the work place, and in society and government.³

Educational Institutions of the Future

The educational institution that is organized according to these principles will be radically different from the schools we know today.

- a. Schools today isolate learners from the rest of the society. In the future school buildings as such may well disappear. For the youngest children these will be replaced by centers that bring them contact with a variety of adults; older children will be introduced as early as feasible into settings in which learning occurs in carrying out "adult" tasks. What we now call higher education will be oriented toward learning through productive activities of all kind (aesthetic as well as material). Emphasis will be on doing while learning.
- b. Schools define learning as occurring during class hours and academic cycles of primary, secondary, and tertiary. Already we recognize that learning should occur all during life, and that much learning takes place outside of schools. In the near future work will be redesigned to encourage learning while doing, and it will be difficult to distinguish when a worker is working and when learning.

- c. The new education can not be achieved in the short term by a simple decentralization or privatization of public education systems. All evidence is that schools controlled by local communities and market forces innovate primarily in financial management and superficial aspects of education. Private schools driven by market forces seldom experiment with curriculum content and instructional methods. At the same time, public systems operate under a number of constraints that limit their disposition to change.
- d. Required changes can best be brought about by the formation of new alliances that surpass the limitations of central government and uncontrolled markets. These alliances, which also are central to the development of vital democracy, will generate a new consensus about education. I suggest that consensus might well focus on the topic of "knowledge for development," defining the kind of development you seek and identifying the kinds of knowledge that will be required to achieve your vision.
- e. Insistence on the value of all kinds of work and of multiple intelligences will enable us to move from orthodoxy to heterodoxy, and facilitate global, as well as local and national communication. The advances of globalization offer opportunities for communication at all levels: it is up to us to teach and to learn how to use the new technologies to build more complex societies.⁴

References

¹ The critique of public education has been especially fierce in the United States, defined first as a nation at risk National Commission on Excellence in Education (1983). *A nation at risk: The imperative of educational reform*. Washington, D.C.: United States Government Printing Office., more recently condemned because of declining average scores on the national university entrance examination. The results are misleading. While overall average test scores did decline over a 20 year period, the scores of each sub-population in American schools have increased. Even children from poor families and certain minority groups, who traditionally have scored lower on achievement tests, are now doing better. However, because of migration and changing reproduction practices there are now proportionately more poor and minority children in public schools than before, the overall average score has declined. In other words apparent failure is explained by the success of public education in including those previously excluded Bracey, G. W. (1993). The Third Bracey Report on the condition of public education. *Phi Delta Kappan*, 75(2), 104-112, 114-118.

Bracey, G. W. (1994). The Fourth Bracey Report on the condition of public education. *Phi Delta Kappan*, 76(2), 115-127..

² Supranational organizations have beat a steady drum urging decentralization and privatization. Corporations with enormous have demanded a voice in education policy debates gravely out of proportion with their significance in society. Although corporations make demands on public education systems, they overwhelmingly support private schooling. Corporate donations to education in the United States declined significantly during the 1980s, and almost all (98.5%) funding was centered in colleges and universities likely to be attended by the sons and daughters of business executives. Tax breaks given by local communities to corporations were greater than corporate funding of public primary and secondary education through donations and taxes combined. Reich, R. B. (1991). *The Work of Nations*. New York: Vintage..

³ All these elements are familiar and have been enunciated earlier, by Dewey and Freinet and Dalton and Pestalozzi and others. Perhaps all good teachers have always incarnated these ideas. Most teachers did not, however, because the centralized and rule-driven organization of education systems actively discouraged them. Like globalization, there is much familiar in the proposals for constructivist education but for this generation it is a new idea. There is also a strong parallel between the new paradigm for education, and the

thrust of those who promote knowledge for development World Bank (1999). *World Development Report: Knowledge for Development*. New York: Oxford University Press..

⁴ For examples of the new paradigm in practice, in traditional school settings, see McDermott, J. C. (Ed.). (1999). *Beyond the Silence: Listening for Democracy*. Portsmouth, NH: Heinemann.

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