

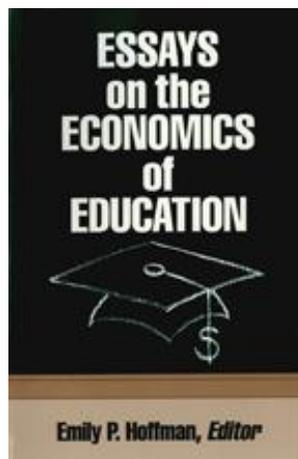
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# The Economics of Education in a World Of Change

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# **The Economics of Education in a World Of Change**

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## **The Meanings and Scope of Education, Economics, and Change in the Present Context**

Central to any meaningful analysis of the economics of education is the notion of change, an idea that I wish to explore in these pages. To do so it is first necessary to bring some clarification to the meaning and scope of the terms “education” and “economics of education.” Only then is it possible to determine what sorts of changes—societal, political, economic, or others—are indeed relevant to this context. I then turn to the implications of change as it affects and is affected by education in industrialized societies. Although they merit their own study, for want of space I refer only incidentally to common and distinctive aspects of such change in less developed countries.

First, education is much more than schooling. It is all sorts of investments in learning. This must be obvious as soon as one looks across diverse societies and cultures around the world at any given time. Even illiterate societies have educational systems. It is equally obvious if we look over historic time in given societies, whether in the Eastern or the Western hemisphere. Lawrence Cremin is well known for his broad definition of education, which encompasses all investments of time in learning. This notion, however, leaves open the question of how far schools in fact educate, and whether education (in schools or elsewhere) is always a “good.”

Second, economics is more than what money measures. If usually we think of “education” in normative terms, what about “economics”? Which type of economics—positive or negative—is primarily relevant here, and to what extent can the positive and the normative be separated?

This leads immediately to the question: Does the “economics of education” encompass broader values, or is it concerned only with monetary costs and returns? To be sure, most of the benefit-cost analyses of investments in education have been limited in this manner. So limited too, have been treatments of education in aggregative analyses of “national economic growth.” But “human resources” are much more, in both individual and societal perspective, than potentials for contributing to monetary returns.

Third, societal change has many facets. We all experience change over a life span, but this could be the situation even in an essentially changeless, traditional society. Today’s “world of change” has certain unique features. Here societal traits, some of which may shift rapidly, bring myriad changes that are manifest over a single life span of an individual. Other changes become evident in their impacts over longer periods.

Three societally relevant sorts of intra-cohort changes may be conceptually distinguished. (1) *General economic cycles* bring cyclical changes in both investments in education and returns on such investments. (2) *Rapid, innovative* changes can have immediate impacts on the demands for services of skilled people. Such changes may be technological or organizational or a combination of the two. (3) Finally, there are *education-induced* societal changes within the adult life span of a single cohort, which arise in response to changes in the distribution of education among a population, whatever the shares of overlapping cohorts in such a change. Stated to include demographic changes in age and sex distributions, they might better be termed changes in the distribution and quantity of human capital.

In fact, changes of all three of these societal sorts can and often will arise contemporaneously. Sorting out these components in changing associations between education and earnings has been one of the important endeavors in empirical studies of the economics of education in recent years.

Where change is so slow as to be barely perceptible within the span of an individual life, the immediate consciousness of change over a lifetime will reflect only age cycles that seem to repeat themselves. However, when change is cumulative over extended periods, whether slow or rapid, its analysis in relation to the economics of education has often been characterized merely by comparisons between historic eras

or sharply contrasting contemporary societies—relationships that are usually simplified by disregarding societal intra-cohort shifts. Such simplification can be well justified except in cases where rapid intra-cohort shifts constitute a major feature of an historical era or a particular contemporaneous society. This exception, however, is extremely important.

### **Change and the Economics of Education in Industrialized Countries**

Concentrating on change and education in industrialized countries, five main subjects call for attention. First is the proposition that disequilibria drive modernization, and that human capital plays a major part in that process. Second, uncertainty in the face of change has implications of uncertainty for education, and in particular for the roles of general education in a world of change. Third must come consideration of the ongoing debates concerning vocational, specialized, and general education with rising affluence (pervasive in connection with less developed as well as economically advanced nations). Fourth, what may we have to say about the roles and distribution of postschool training among members of a population in the face of dynamic change? Finally, are those who drop out of school early irrational? What about motives and incentives for educational decisions and concerning postschool behavior?

The argument that human capital and disequilibria constitute the mainspring of growth is the theme of a 1990 book by T. W. Schultz, entitled *Restoring Economic Equilibrium*. There he stresses three “common omissions” in modern growth theory. These are (1) *specialization* as a key to most modern increases in income; (2) *disequilibria* as increasing incomes are realized from advances in technology, from the proliferation of human capital, and from other sources; and (3) *entrepreneurs as agents* in restoring equilibria. The emphasis on specialization is not unique to Schultz. Indeed, this enlargement of Adam Smith's division of labor has characterized a number of papers, published and unpublished, by other economists over the past decade. Nor is a stress on entrepreneurship new; it was central to Schumpeter's the-

ory of economic development eighty years ago, although it has received little attention recently. What is distinctive in Schultz's recent work is the extent to which he focuses on *small* entrepreneurs and the nature of his treatment of "disequilibria." Criticizing economists in general, he writes, "It has become an art to conceal economic disequilibria that occur as a consequence of modern increases in income," whether such increases arise from technological change or from growth in human capital. In Schultz's (1975) view, disequilibria caused by modernization are seen as signals of income-increasing processes, which in turn give rise to new opportunities—hence his emphasis on the importance of "the ability to deal with disequilibria." That ability, designated elsewhere as "allocative" versus "worker" ability, has been shown to be associated with the completion of higher levels of schooling in both the United States and India.<sup>1</sup> A partial appreciation of the importance of this sort of entrepreneurial ability appears frequently today in nonacademic publications—for example, in *Forbes* magazine and the *Wall Street Journal*. But there is a paradox in all this. It would seem that specialization yields progress, but that a general education should provide the firmest base for dealing with and adapting to change. Specialization precipitates the disequilibria that give rise to economic progress; general education underlies abilities to remove those disequilibria through their creative resolution.

Second, a society in which the unexpected is perceived as the norm calls for "general education." Change breeds uncertainty, and a world of dynamic change is inevitably characterized by doubts and questions that affect the economic logic of choices in preparation for and in reactions to the unexpected. In addition, there are uncertainties for the individual in an advanced market economy that overlap with changes in the societal environment. This raises the question: How far do individual uncertainties inherent in a market system coincide in the nature of their effects with the overlapping uncertainties associated with cyclical or rapid technological or structural changes?

One essentially simple theme of this discussion is the importance of ensuring flexibility in adaptation to changes in technologies and in skill demands and supplies. This leads to a fundamental proposition regarding educational choices as viewed from both individual and societal perspectives. In brief, a critical function of education in the early years would seem to be "general" learning, in that it will provide a flexible

foundation for future learning, whether in formal institutions or elsewhere.

But what is a “general education”? Most fundamental and most general of all is undoubtedly the learning of attitudes and behavior that takes place (or fails to take place) in the home. This is why advanced industrial societies have exerted ever increasing pressure to provide formally for the education of children in the preschool years. It is a reason also for tendencies to ask ever more of the schools as socializing agencies, demanding that they go far beyond their earlier roles (some church or elite boarding schools aside). Moreover, work experience in itself may provide elements of general education for future job success in almost any vocation. All of these tendencies can have important economic effects, even if we define “economic” in the narrowest, monetary sense.

Beyond this, numeric and verbal literacy are undoubtedly among the most elemental foundations of general education throughout the industrialized world. But definitions of “functional verbal literacy” change, while numerical literacy tends to become less demanding on the one hand (with the omnipresent cash register) and more demanding on the other hand, in terms of mathematical literacy. Cutting across them all now is the issue of computer literacy.

Meanwhile, “practical”—not to be confused with “vocational”—learning has been coming in for more attention, along with estimates of its costs even if not yet of its returns. What constitutes “generally practical” learning will depend on environmental conditions.

It is evident that the more technologically advanced and diverse a society, and the more rapid the pace of economic change, the greater must be the demand for a general education that can foster adaptability, whether from an individual or a societal perspective.

Third, where, then, does specialization come in? A fallacy that remains common in some quarters, even today, is the notion that schools should “turn out” students fully trained for particular intermediate-level jobs. Usually this argument underlies demands for the vocationalization of secondary schools. But frequently it confounds the vocational with the practical, which may be of general relevance to most members of a population. Even if the “practical” skill is of general relevance, questions may still arise as to the cost and effectiveness of providing it in schools or through other channels. This leads into the

question, What level of general schooling should candidates attain before vocational specialization? Cogent arguments for increased specialization may well hold with reference to postcollege education, for example, even while in a particular environment arguments for widespread vocational specialization during secondary school might attract little support. What we have to remember is that the case for rising specialization in advanced economies rests on two assumptions: (1) that the students already will have attained high levels of general education, and (2) that they are well prepared to deal with changes in future knowledge and practice in the general area of their specialization. Rapid change in an advanced society supports and depends upon both high levels of training in general competence in a cluster of specialties *and* increased high-level specialization.

It is in such a context that Rosen (1983) contributed his eminently readable essay on specialization, the gist of which was that incentives to specialize arise from increasing returns in utilization of human capital. This comes about because of the indivisibility of human capital, embodied as it is in the human being. In Rosen's words, "The return to investment in a particular skill is increasing in its subsequent rate of utilization because investment costs are independent of how acquired skills are used" (p. 44). He illustrates the working of this principle by pointing to the differences between men and women in incentives to invest in human capital, and to the division of labor within households. Becker and Murphy (1990), among others, have expanded on Rosen's discussion to carry further the argument concerning the importance of rising specialization. As an economy becomes technologically more complex and the quantity of disembodied knowledge in a society becomes progressively larger, no one person can contain more than a minute fraction of the total. Limitations on the extent of specialization go beyond Adam Smith's size of the market to include the costs of coordination. In our day we are witnessing a multiplication and refinement of communication technologies that lowers coordination costs and the barriers of distance, even as an increasingly complex market economy takes over a major part of the task of coordinating the work of ever more specialists.

An argument between T. W. Schultz and his Chicago colleagues persists with respect to the concept of disequilibria and the place that Schultz has given to that concept. There is substantial agreement,

nonetheless, with respect to the importance of high-level specialization in the dynamics of an advanced economy.

Next is the question: How do the uncertainties of change and postschool human investments interact? In an economically advanced and dynamic society, continued learning over the adult years must be important for almost everyone but will not be the same for all. For some it may be in large part a process of recovery from earlier mal-allocation of time away from what should have been learned, even at relatively low levels of both general capabilities and particular vocational skills. At the other extreme, manifest in most professions, continuous intensive learning is required merely to keep up with rapid increases in knowledge. At both extremes, and in between, postschool learning is an essential ingredient in sustained productivity for both individuals and society. Catching up and keeping up both are important, whether or not entrepreneurial in an innovative sense. Even if catching up and keeping up are in themselves more reactive than creative, both are essential in the processes of societal change.

Indeed, whether a society is characterized by dynamic change or not, an examination of postschool learning is necessary in order to identify returns on investments in schooling, insofar as the extent of postschool investment in human capital is associated with the extent and nature of prior schooling. Or to be more precise, such an investigation is necessary unless one of two special situations prevails: either (1) postschool learning is determined fully by the prior schooling without any further investment in human capital; or (2) rates of return to schooling and postschool investments in learning are the same. But these are very special situations. Even in an essentially static approach, it becomes necessary to look further into what happens in the postschool years. One of the most debated issues in the economics of education centers around just this problem. Jacob Mincer (1993) has pursued it empirically for the United States over some years, sorting out what part of observed life-earning streams associated with different levels of schooling are in fact attributable to postschool investments, whether in direct outlays or in forgone earnings.

As soon as we shift to talk about change, further questions arise in the interpretation of life-earnings paths constructed from cross-sectional age-earnings distributions. Only if there is no change across cohorts in the forms of those paths will a construct based on age-earn-

ings data at a given time give an unbiased picture of the experiences of any real population cohort. If later cohorts have generally higher earning streams, the cross-section data will understate the increases of earnings over a life span. If there are inter-cohort declines, the steepness of intra-cohort earnings paths will be overstated.

As we should expect, this is one of the spheres in which there has been a relatively active and pragmatic treatment of the three sorts of societal change listed above as they pertain to the economics of education—cyclical shifts, innovative change as it affects demands for skills, and changing relative skill supplies.

Finally it is necessary to treat some critical questions concerning distributions of knowledge and incentives among a population. One of the most important developments in microeconomic theory over the past generation has been the evolution of the economics of information. I have already referred to this indirectly in earlier remarks concerning specialization. But it has much wider and more profound implications for economic theory in so far as that theory is built on one or another concept of “rationality” in human behavior. It calls on us to reassess incentive structures. In the real world what may they imply for the “rationality” of behavior with respect to educational decisions made by individuals? And what about decisions in the use of whatever human capital the individual may have acquired? At this point, where incentives meet motivations, goals, and values, the economist's concerns must interact with the concerns of both psychologists and philosophers. That is a large order. Here I shall cut it down to just two questions, centered primarily, in both cases, on what might be labeled societally “perverse” incentives.

First is the problem of understanding decisions of educational laggards in an affluent society in which schooling is available to all. If the importance of basic general education is so evident, why do many youths remain virtually illiterate, as happens in the United States even today? Does this come back to ignorance of the knowable, or to a lack of economically rational motivation, or to both? For that matter, is a negative educational motivation economically rational in a subsociety that presents some youths with perverse economic incentives? Is the problem one of short time horizons with heavy subjective discounting of potential future returns? If so, why those high discount rates? Or are immediate returns to time spent in criminal activities just too tempting

relative to the risks, ethical values forfeited aside?<sup>2</sup> These are critical questions not only for sociologists and psychologists, but for economists as well. There is a clear difference between the psychologist and the economist in approaching this problem, however—a difference that dictated use in the first sentence of this section of the word “incentives” rather than “motivations.”

Or, to consider the issue from a different angle, what about the slow reactions of educated people who resist or delay in responding to changes in their future prospects that are relatively easy to predict? Is this in fact an important phenomenon that slows progress for both society and the individual? Or is it bound up with a lack of readiness to take the chances inherent in creative action? Can economists contribute anything here? Perhaps so.

Some further light might be shed on such questions by taking another look at a microeconomic theory of the firm in a world of uncertainty. Over many decades G. L. S. Shackle developed and honed a theory of behavior of the firm in the face of uncertainty (not insurable risk). He introduced the idea of “potential surprise,” favorable or unfavorable, in focusing attention.<sup>3</sup> Relatively small variations in likely eventualities would not have such an effect. This proposition may have both a psychological and an economic basis. Economically, the pursuit of information and planning of changed actions or policies are costly, both in direct outlays and in the value of forgone uses of time. Psychologically, there may also be a conservation of effort so long as motivations to avoid potential surprise are not strong. This line of thought brings us to two practical hypotheses with reference to those who drag furthest behind and those who will lead in a changing environment, respectively.

First, looking at educational decisions in this way should help us to understand the seeming irrationality of the disinterest shown in even elementary schooling among members of subpopulations whose entire immediate environments are loaded with anti-education incentives. Not only is the future heavily discounted; in addition any subjective sense of favorable potential surprise associated with schooling is distant. In such considerations, economics and psychology are joined.

Second, the lower the cost of expanding knowledge and the greater the capability for involvement in directed change, the more economically sound and pleasurable will be involvement in innovative actions.

This is where contributions of education to entrepreneurial leadership may come in. Unfortunately, however, incentives can be as perverse among some of the presumably well educated as among the educational laggards—perverse not so much in terms of individual financial incentives as societal benefits and costs.

## Conclusions

The bottom line is in the uses of time over and across time. In St. Augustine's remarkable treatment, time is seen to exist only in retrospect (as memory) and prospect (as expectation). The present is no more than a transition from past to future. But past events make the future, and today's future is tomorrow's past. Change is everywhere, even in a society that is repetitive in the turnover of events and the ways in which people make use of time as they move through their life cycles. However, societal change today is much more than repetition as successive cohorts pass through time. Education has played and continues to play a significant part in that process, even as it is also a response.

Conceptually static models of the economics of human resource development and utilization are simplifications that provide a first step toward understanding the decisions that make up economic life. But these first steps can be misleading. Simple repetition in the purest form is in fact an impossibility today, and what can be seen at any given time is already the reflection of relevant recent and prospective changes. Those changes include population growth, shifts in the skill mix of the population (due both to schooling and out-of-school learning), and technological innovations—all of these in both the recent past and in expectations for the future. Any one of them might predict at least directions of change in an otherwise static human investment model, but it is humbling indeed to take all of them together along with changes in the pace and mixes of change. To see this, consider what might happen to human investments and indeed to economic life in general, if the really big change came—a cessation of change! Can we even imagine such a situation in the next generation, given what we see around us and the very nature of human nature?

And so I come to the fundamental generalization—that what we observe is itself a function of change, and so is most of what we may say in general terms concerning the economics of education. Despite changes that will come (for better or for worse) in the educational structures and contents of a future world, this much we can say with assurance: education itself contributes to change. And a world of change calls for learning both within and outside of schools. It calls for general education as a preparation for future learning, for specializations that can cope with change, and for both applied and theoretical learning.

The empirical referents in even our static models of human investment decisions and benefit-cost theory are built on expectations concerning a reality that is always changing. That reality is embedded in the flow of time. And so it happens that we are facing and affecting change, whether we see things that way or not. In the long run only a conscious awareness of this fact can bring us closer to understanding the events and the problems that surround us and in which we are inevitably enmeshed.

Notice, however, that none of the relatively firm pronouncements just set forth says anything about the underlying purposes of education, nor do they take note of the origins of economics in moral philosophy, so wisely stressed by Harry Johnson (1972) in his commentary at a conference on “The Equity Efficiency Quandary in Education.” Yet the present paper was written to communicate with an essentially academic audience from diverse disciplines, and on the same day I presented to a group of economists a paper that I called “The Day Aristotle Visited an American School System.” Both Harry Johnson in the late twentieth century A.D. and Aristotle in the fourth century B.C. stress the importance of reason, and both challenge us to look beyond narrow boundaries in our thinking to ask what is really important: in the present context, education for what? In Aristotle, this is lifelong learning, from early upbringing of children (to “moral virtue” by inculcation of good habits), on to an unending pursuit of wisdom, both theoretical and practical. In Harry Johnson it is essentially the same, though he too is a man of his own time. The twenty-first century will soon be here. Perhaps it will call us to seek a wisdom less bounded by formal academic disciplines and more alert to the human questions that are already calling upon us to probe the roots of education in our day.

## NOTES

1. For early examples, see Chaudhri 1968, and especially, Welch 1970.
2. Richard Freeman (1992) has addressed this problem recently in a working paper for the National Bureau of Economic Research.
3. For an application of some of his ideas to investments in human beings, see Bowman 1972.