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I. ECONOMIC COMPONENTS OF EDUCATION

My aim is to bring economic analysis to bear on education. Until recently, judging by what economists have done in this area, one might infer that the tools of economists were not useful in studying education, or perhaps that the costs and economic value of education were not important enough to warrant their attention. The early masters provided no systematic treatment of education when they developed the analytical core and staked out the boundaries of economics. Neither the satisfactions that people derive from schooling nor the investment attributes which enhance productivity and earnings of workers were investigated. The reasons for this neglect of the economics of education are shrouded in the *Weltanschauung* of the time, about which there are some speculations [70, 191].*

Upon reflection the economist who contemplates entering here may feel reluctant. He is, as a rule, an educator and thus mindful that he has a vested interest in education which could cast a doubt on his impartiality. Education is intimately a part of the culture of the community which the economist shares, and this too creates a presumption that he cannot be wholly objective. No doubt there are more risks here than in the old plots that have long been cultivated by economists.

In asking questions pertaining to education and in classifying the components to be studied, an economist is guided by theory. But theory, and economic theory is no exception, always abstracts from particular attributes of the activities that are being investigated. The fact that there are some attributes of

* Numbers in square brackets refer to the Selected Bibliography, pp. 71–89.

education that can be treated by economics does not mean that they are necessarily important. Nor does it imply that those which economic theory "puts aside" are unimportant. Surely the findings that emerge out of the work of economists in this area are by no means all of the educational story. Yet this fact is not inconsistent with the belief that economic knowledge about education is both real and relevant in making private and public decisions with regard to education.

What, then, are the questions that matter when it comes to the economics of education? How are the economic components of education to be classified? As a rule, too little thought is given to these issues, judging by what some economists do. It has been fashionable to produce models without much thought as to whether the question which a particular model might serve to answer really matters and, also, without sufficient regard to the feasibility of getting back to the real world.

There is always the temptation to proceed promptly to the ultimate question about resource allocation, that is, how efficient are we in our private and public decisions in the allocation of resources entering into education? For a country in its entirety, this question would require treating education at a very high level of generality. The economic test of efficiency would be that neither too many nor too few resources are being employed to provide an optimum flow of educational services, which in turn implies that the particular resources that are employed are being used in the best combination to "produce" this flow of educational services. At this level of generality, however, it is exceedingly difficult to bring economic analysis to bear and not lose contact with the substantive economic properties of the cost components and, more especially, with the values of schooling. To most persons, moreover, resource allocation so broadly conceived is likely to seem essentially hortatory.

I propose to begin with less comprehensive questions pertaining to education in order to get at issues that are analytically more manageable at this stage of our knowledge. Inquiries directed to these issues are giving us or will give us the essential pieces of knowledge that will permit us, as we advance, to

take on the more ultimate question. In the final analysis, however, it will be necessary to return to a comprehensive conception of resource allocation.

What Is Meant by Education?

Concepts of education, like those of freedom, bristle with difficulties. It is hard to define education because of what it connotes, which depends in no small measure upon the particular culture in which education occurs. Education is intimately bound to the culture of the community it serves, and for this reason what education means differs from one community to another. What all education has in common after allowance is made for these cultural differences is "teaching" and "learning." Thus, to educate means etymologically to educe or draw out of a person something potential and latent; it means to develop a person morally and mentally so that he is sensitive to individual and social choices and able to act on them; it means to fit him for a calling by systematic instruction; and it means to train, discipline, or form abilities, as, for example, to educate the taste of a person. The act or process of achieving one or more of these objectives is, as a first approximation, what education is about.

For some purposes "schooling" and "education" are interchangeable, but for other purposes a concept is required to represent the activities that are an integral part of the teaching and learning of students, and another concept to represent particular functions of the educational establishment. When it becomes necessary to make this distinction, I shall use *schooling* for the first and *education* for the second. Later in this study, I shall refer to a "year of schooling" as a first approximation of the amount of organized instruction that a person has received. Schooling is thus a concept applied to the educational services rendered by elementary and secondary schools and by institutions for higher learning, including the effort of students to learn. Organized education, however, is not only engaged in "producing" schooling but also in advancing knowledge through research, and for its own sake going beyond teaching or instruction that enters currently into schooling. The educational estab-

lishment is engaged in a number of activities which do not become an essential part of the achievement of students. Research, as already indicated, is one of the traditional functions of the educational establishment. Not so obvious, but important nevertheless, is the discovery and cultivation of potential talent. There is the special recruitment and instruction of teachers, reinforced by subtle indoctrination on behalf of the nonmaterial rewards of teaching. Thus, although schooling and education are often interchangeable terms, it will be necessary in this essay to distinguish between them.

I propose to treat education as a specialized set of activities, of which some are organized, as they are in schools, and some are essentially unorganized, as is education in the home. Machlup's [212] classification is instructive. In it he treats education as one of the activities that produces knowledge and he then proceeds to classify education into that which is done in the home, in the church, and in the armed services, education in firms consisting of on-the-job learning, and education in schools consisting mainly of elementary and secondary schools and institutions of higher education. Schools may be viewed as firms that specialize in "producing" schooling. The educational establishment, which includes all schools, may be viewed as an industry.

It is, of course, true that the educational establishment does not have some of the economic characteristics of a conventional industry. With a few unimportant exceptions, schools are not organized and administered for profit. The assets of educational institutions are not listed on any stock exchange. Students, or the families supporting them, do not as a rule pay all of the costs that are incurred in schooling. To the extent that schooling increases the future earnings of the student, it has the attributes of an investment. But the human capital thus created cannot be sold as can nonhuman capital. The contribution of most education is multidimensional, in serving at one and the same time social, political, and other purposes. These and other differences between the educational establishment and a conventional industry do not, however, preclude the application of economic analysis to education, although these differences must be

taken into account by economists in their studies of education.

A new field of inquiry has its attractions. Education for the economists is such a field. In bringing economic analysis to bear, there are two components that matter. There also are issues which pertain to the manner in which education is organized and how effectively it uses resources. To gain perspective on these, let me begin with a sketch of them.

Two Basic Components

Whatever the benefits of schooling, costs really matter. They at once suffice to show that resources entering into schooling are not trivial. In the United States, for example, the annual costs of elementary, high school, and higher education exceed $30 billion. Costs also show that most of them are borne by students and their parents, notwithstanding the belief that schooling is virtually free because of public education. But it is most assuredly far from free for mature students because the earnings they forego while attending school are likely to exceed all of the other school costs incurred by them and for them. It would of course be possible to provide students with scholarships equal to the wages they could earn if they took jobs instead of continuing in school; this would shift the cost burden to someone else, but the underlying total costs to society would remain unchanged. I do not wish to indicate by this who should bear these and the other costs of schooling. My purpose here is simply to bring earnings foregone by students into the picture. The concept of foregone earnings as one of the costs of schooling is a key to a number of puzzles about education.

If earnings foregone were ignored, studies of lifetime earning differentials associated with levels of schooling would indicate an exceedingly high rate of return to what high school and college students in the United States have been paying for their schooling. Even when all of the public and private school expenditures are taken into account, this rate of return is still very high relative to the rate of return on alternative investment. When earnings foregone are included in the estimates of costs, estimates of the rate of return are cut by about 60 percent. Even

so, the rate of return may be as high or appreciably higher than that on investment generally, but with the inclusion of earnings foregone in costs, the inordinate disparity in the rates of return is resolved.

Opportunity costs also provide a unified explanation of three other behaviors: *(a)* many talented children from low-income families do not continue their schooling beyond the age that is legally compulsory even though tuition is free or scholarships are available to cover tuition, *(b)* children from farm families attend school less regularly than do children from urban families, and *(c)* many children in low-income countries who complete the first few years of schooling drop out after that. In these three situations, earnings foregone appear to be a key because children can be called upon to do useful work and thus contribute to the meager family income.

In poor countries the costs of a (standard) year of elementary schooling decline as family incomes rise; whereas in high-income countries, the costs of a year of schooling at all levels increase markedly. Why should this be true? Why, for example, should the costs of a year of schooling in the United States rise over time relative to consumer prices and also relative to gross national product prices? In a section devoted to costs, estimates will be introduced which show that between 1930 and 1956 the costs of a year of elementary schooling rose about 60 percent relative to prices implicit in the gross national product and that for a year of high school about 90 percent.

While it is obvious that costs are a basic component in studying the economics of education, it is surprising how little has been done to develop appropriate concepts for this purpose and to identify and measure these costs.

What is the value of schooling? A babel of voices will respond to this query. It is moral, refines taste, and gives people real satisfactions. It is vocational, develops skills, increases earnings, and is an investment in man. Our task is to treat these and still other values of schooling in a framework of economic analysis.

But the moment it is suggested that the economic value of schooling is under consideration, there are many who protest, for they believe that placing a "price" on education is to debase it. "Whatever you do in studying education, do not apply an economic yardstick to its worth," expresses a deep-seated apprehension. This apprehension is groundless analytically. Although it is, of course, true that particular bits of economic knowledge are sometimes misused by those who have an axe to grind in shaping policy [69], there are no reasons for believing that education is more vulnerable in this respect than are other areas of endeavor.

But the belief that the values of schooling are beyond economics will undoubtedly persist at least until studies by economists demonstrate that this is not true. Meanwhile, it may be useful to examine an aspect of this issue; namely, the distinction that is often made between the "cultural" and "economic" attributes of schooling. Implicit in this distinction is a dichotomy which separates culture from economy, or the art of living viewed as cultural from the practice of earning a living, which is excluded from culture. Such a dichotomy, however, rests on a special and very narrow notion of culture. A general and comprehensive concept of culture does not exclude the consumption and production activities on which so much of economic analysis concentrates. How people earn their living is in general an integral part of a culture. Etymologically *cultura* in Latin means to till and cultivate, and where the growing of crops is undertaken it is agri*culture*. What matters here is that the manner by which people earn their living and the economy that serves them in this respect are an essential and important part of the culture of a people. So is science and technology in universities and throughout a modern economy. Then, too, even if all schooling were for moral purposes or for the refinement of taste, it is not free. In the United States, as already noted, it costs annually over $30 billion, and the well-being that is attained is presumably not unrelated to the amount spent. There is much grist here for the economists. I conclude this comment then by observing that it is

misleading to treat an economy as if it were not a part of the culture of a community. Conversely, it is misleading to treat culture as if it had no economic implications; expenditures for moral purposes or refinement of taste are not beyond economic analysis.

The value of schooling is based on the proposition that schooling affects well-being favorably. To begin, let me assume that all of the benefits of schooling are *captured* by the student and, therefore, that none of the benefits of his schooling improve the well-being of his neighbors, of those who employ him and of his co-workers, and none are widely diffused in society. Schooling can contribute satisfactions either in the present (for example, immediate enjoyment of association with one's college fellows), or in the future (increased capacity to enjoy good books). When the benefits are in the future, schooling has the attributes of an investment. As an investment, it can affect either future consumption or future earnings. Thus, the consumption component of schooling is of two parts: schooling that serves present consumption and schooling as an investment to serve future consumption. The producer component of schooling is an investment in skills and knowledge which enhance future earnings, and thus it is like an investment in (other) producer goods.

The satisfaction that people obtain from schooling is the consumption component. It consists of values associated with education that are not as a rule vocational, occupational, or professional. Schooling to acquire abilities to increase future earnings is not consumption. When it is consumption, its value can be moral, or a refinement in taste, or some other source of satisfaction. To the extent that schooling is a consumer "good," it is predominantly an enduring component, even more enduring than most consumer durables. It is hard to find plausible examples of schooling that represent primarily present consumption. As an enduring consumer component, it is a source of future satisfactions which enhances future real income. But these satisfactions are not reckoned in *measured* national income.

Treating the expenditures for schooling as economists do other consumer expenditures opens the door for demand analysis to determine, among other things, both the price elasticity and

the income elasticity of the demand for schooling. Although the prospects along these lines are slim, for reasons to be presented below, some useful knowledge can be won. While the relative price of educational services is not subject, as are raw materials and farm products, to major short period fluctuations, the real cost of schooling, hence its real price, rises more than the cost of living over long periods in countries in which real earnings of workers, including the salaries of teachers, rise relative to the price of other factors of production [20, Tables 13 and 28; 22; 130]. Accordingly, estimates of this price elasticity would be of some relevance in analyzing real decisions of people. The income elasticity of the demand for education is, however, more important because the real income per family has risen much over time in the United States and also in many other countries, and because the effects of income upon the demand for schooling appear to be large. There have been attempts to gauge this income elasticity, which suggests that it may be high, perhaps between 2.0† and 3.5 [19]. Studies restricted to school expenditures show much lower elasticities with respect to income: Fabricant [8] for 1942, 48 states and expenditures per capita for current operation obtains an elasticity of .78; Brazer [107] for 1953, 40 large cities, per capita operating expenditures .73; Hirsch [12] for 17 years selected from the period 1900-1958, United States daily total current expenditure plus debt service per pupil, 1.09; and, Shapiro [133] for 1950, for 48 states current expenditures per pupil, societal (where the above are all based on public expenditures), derived an elasticity of .94. There are, however, serious difficulties in making and interpreting these estimates. They cover only a part of all expenditures. Earnings foregone are not taken into account. Most of the education that satisfies consumer preferences has an enduring quality, and it is therefore not like food, but like a very long lasting consumer durable. The main difficulty, however, arises out of the fact that many educational

†Professor Margaret Reid has examined the expenditures of particular urban consumers, and her preliminary estimates tended to cluster around 2.0 for the income elasticity of the demand for education as revealed by these private expenditures for education.

expenditures have the properties of an investment in a producer capacity, and it is not correct, therefore, to treat this part as consumption. Nevertheless, there is, in education, a sizable component that argues for consumption and demand analysis.

Where schooling increases the future earnings of students, it is an investment. It is an investment in human capital in the form of abilities acquired in school. Investments in human capital are many and the amount has become large. Truly, it can be said, the productive capacity of labor is predominantly a *produced* means of production. We thus "make" ourselves and to this extent "human resources" are a consequence of investments among which schooling is of major importance.

From this it would appear that the analytical job with respect to the amount invested, the stock of such capital, the earnings attributed to it, and the rate of return to investment in schooling is straightforward. But appearances are misleading. As Becker shows, received theory of investment requires substantial reformulation to cope with investment in people [29]. The formal relations between earnings, rates of return, and the amount invested must first be determined before such theoretical relationships can be used as an analytical tool. Earning differentials are affected by such factors as age, sex, race, unemployment, inherited ability, informal education in the home, and city size along with schooling. Estimates of the amount invested in schooling to increase future earnings are affected in turn by the part of the costs of schooling that is attributed to present and future consumption. The rate of return will differ, also depending on whether we use the costs of schooling to students and to their parents or to them and others, so as to take account of the total factor costs of schooling.

For the purposes of this essay, it will suffice merely to say that studies of schooling which treat it as an investment are an important source of new knowledge about the economy. Investments in schooling are not trivial; quite the contrary, they are of a magnitude to alter radically the commonly accepted estimates of the amount of savings and capital formation that take place. Received propositions concerning the determinants of the structure of wages and salaries (relative earnings), the personal distribution of income, and the sources of economic growth will all require reformulation.

The investment in schooling has been large in the United States. The "stock" of such capital – formed by schooling – has been increasing at a rate that exceeds by a wide margin the rate at which the stock of material reproducible capital has been increasing. The rate of return to investment in schooling is as high or higher than it is to nonhuman capital, even when one attributes all of the costs of schooling to investment in earnings and, therefore, none of it to consumption. As a source of economic growth, the additional schooling of the labor force would appear to account for about one fifth of the rise in real national income in the United States between 1929 and 1957.

Earlier we imposed the assumption that all of the benefits of schooling are captured by the student. Weisbrod [78] examines a large set of benefits from education (he includes university research) other than future production returns that become a part of earnings. Clearly, schooling can benefit some persons other than the student. Other families benefit as neighbors and as taxpayers. There are some employment-related benefits which go to co-workers and to employers and some, as already noted, that are widely diffused in society.

Stability and Efficiency

The economic stability of the educational sector deserves to be mentioned. I know of no studies of the effects of recessions and recoveries (trade cycles) upon the educational establishment or of the effects of the apparent stability of this sector upon the rest of the economy. Education clearly is not one of the unstable sectors of the economy; on the contrary, it may have some dampening influences by absorbing some additional resources (mature students) during recessions as unemployment rises and by releasing some during periods of recovery. However, it is hard to deteot these shifts even in such detailed measures of "retention rates" from the fifth grade up and into college entrance as are now available [25, p. 40].

The strong upward trend in the quantity of resources entering into education is also relevant in this connection; for example, in the United States, between 1900 and 1956, although the number of teachers rose only from 1.86 to 2.34 percent of the employed labor force, the number of mature students (in high school and in higher education) rose from 3.5 to 16.5 percent relative to the employed labor force [19, Table 2; also 1, Table 14]. Economic instability which results in large changes in the general level of prices bears heavily on education because the educational sector is inherently slow in adjusting to such changes in over-all prices. Much has been said about the adverse effects of inflation upon the quality (competence) of the individuals who are recruited and induced to stay in teaching. The extent of these adverse effects has not, however, been investigated.

Suppose we treat schools as if they were firms and the educational establishment as if it were an industry [139]. How efficient is schooling by normal standards of resource allocation? Surely the optimizing principles on which an important part of economic theory rests are applicable. There are, however, as yet few studies. Nor do I pursue this area of inquiry beyond mentioning it.

I am aware that in school circles the term "efficiency" carries adverse connotations – it implies the efficiency expert with no respect for the human factor in learning and with an overemphasis on how classrooms are arranged, on the introduction of mechanical teaching devices, and on other changes in structures and equipment. "Efficiency" can be pursued, and undoubtedly it often is, with no reliable measures of the real and important differences in the quality of teachers. There is also the ever-present question: How can one gauge efficiency in schooling with no concepts of the quality of the "output" that can be identified and measured? These misgivings about the concept of efficiency applied to schooling are not groundless; moreover, applications of the optimizing concepts of economics to schools are beset with unresolved difficulties [14].

Without being a devotee of "efficiency," I have convincing reasons for believing that the allocation of resources within

schools and between schools matters. It would be surprising if there were not some major "inefficiencies" in the way resources are used in education, given the history of its growth, the changes in relative factor prices that have occurred, and the weak incentives that exist in much of education to adjust to changes in the value of schooling and to changes in the prices of the resources employed, even if there were no technical developments whatsoever relevant to education. There is the traditional long summer vacation, which suited the requirements of an agrarian society but which is not well designed for a highly urbanized society. A strong case can be made that all too little has been done to economize on the time of students because the time of students is commonly treated as if it were costless. Yet, in fact, as I shall show later, the earnings that students forego while attending high school and college are more valuable than all of the other resources employed in education at these two levels. Then, too, the value (price) of human effort of both teachers and students has been rising markedly relative to the price of material inputs. Such a large shift in the relative price of inputs argues for the substitution of material inputs for human effort wherever this is feasible. But is it possible? The facts are far from clear.

There also is a strong presumption that those who make the "production" decisions for education do not give sufficient thought to the changes in the demand for their products. Following Stigler [134], a test can be made to determine whether enough is spent on the search for information. It would appear that both private and public decisions affecting the allocation of resources to education are based on unnecessarily vague information about prospective demands for the skills and knowledge that education produces. These decisions, moreover, are made in an institutional setting that blunts private initiative and swamps public policy with other considerations.

Lastly, there is Coombs' query [196]: How satisfactorily does the educational establishment perform in developing and adopting new techniques? By new techniques I mean new kinds of inputs that are superior to some of the inputs that are being employed in producing educational services. The notion of new and

better techniques in this context includes additions to knowledge. Little indeed is known about the introduction of such new and superior resources within the educational establishment [19, pp. 82-84].

The costs and the value of schooling will be treated at some length in later sections. The other two issues - schooling and the business cycle and efficiency in the way in which schools are run - will not be pursued beyond this point. I have deliberately as yet not discussed the relations between policy and economic analysis, for in education, as in other areas, these relations require and deserve a section in their own right. I now turn to them.

Where Policy and Economics Join

The common school in the United States is predominantly a public school and is inescapably in the mainstream of public policy, and the major underlying policy questions are not altogether new. Despite all that has been said to the contrary, schooling has received a high rating over the decades. Horace Mann, a commanding figure in the early public school movement, saw universal education as the "great equalizer" of man's conditions, the "balance wheel of the social machinery," and the "creator of wealth undreamed of." The idea of universal education was at that time "a radical notion shared by a shaky alliance of farmers, workers, and businessmen" [111, p. 9]. A "free" common school did become a political reality.

Once the common school had been won, there began the almost continuous transformation of the school. The Grange, representing farm people, wanted some practical agricultural training. The rise of industry and the decline of apprenticeships created a demand for some vocational education. There were a few agricultural and industrial leaders who saw the benevolent influence of science and technology. Major cultural adjustments were also necessary because of the changing national community. It was a

major task to *Americanize* the many immigrants, and to *Civilize** the newly developing industrial economy with its new forms of poverty, slums, and unsettled neighborhoods. In addition, the rural community needed assistance to check deterioration. Each of these required adjustments, and education was always viewed as a primary instrument. Each new social reform was soon linked to particular educational reforms. Meanwhile, the idea of the public school was extended to include the high school and the state university. The land-grant colleges and universities are already celebrating their first centennial. But policy questions pertaining to education are far from settled, and the further transformation of the school continues.

Where, then, do public policy pertaining to education and economic analysis join? I shall first examine a view which is based on the belief that the right questions for economic research are policy questions and that those who understand the policy issues can formulate these questions. Next, I shall mention in passing some of the school issues that appear to be of major public concern and then, based on recent research in this area, indicate what its implications are for policy.

Pursuing a Mirage. Although there is much wisdom in the phrase "the first move of importance in the game of research is to ask the right question," it can be very misleading. It misleads those who come to believe that in research the right question is known or readily knowable, hence waiting to be asked; and that a major fault of research people is that they proceed by muddling rather than by first asking the right question. Accordingly, having come to this view, there is then much to be said for having someone whose job it is to ask the right questions. What could be simpler?

Who, then, is qualified to ask such questions? Obviously, it cannot be the muddlers, for they are too close to the data and too

*See Professor John Nef's conception of "civilization" in *Civilization, Industrial Society and Love.* Occasional Paper of the Center for the Study of Democratic Institutions. Santa Barbara, California, 1961.

committed to a theory. It must be an intelligent person who believes in research and who specializes in asking these questions. This reasoning opens strange doors. Congressional committees come to believe that they are well qualified to tell research workers who are supported by federal funds what they should investigate; foundations are also inclined to select the major research questions, although with more regard than Congress for the views of those who think of themselves as "authorities" in a particular field; even universities lean increasingly toward organized research headed by research administrators who presumably either know the right questions or know how to proceed to discover them.† Despite all of these views and efforts, the right questions remain among the real unknowns in the game of winning new knowledge by means of research.

Scientists and others who do research are not without blame for these mistaken views about research. Those who have been successful in making a major contribution to knowledge correctly emphasize the importance of having formulated the right question, but some of them incorrectly leave the impression that they undertook the research with prior knowledge about the precise question to be investigated, and thus they fail to make explicit to others that the formulation of the question which proved to be the rewarding one was achieved as an integral part of the research process. Meanwhile, much is said and written on the need for basic research. But who can determine the studies that will prove to be *basic* research?* Surely it will not be done by members of a Congressional committee, or by the staff of foundations, or by private individuals who support research, or by university

†See my "Economic Policy Research for Agriculture," *Canadian Journal of Agricultural Economics*, IX, No. 2 (1961), 97–100.

*The National Science Foundation, in its annual survey of resources entering into research and development, distinguishes between basic and applied research on the basis of the motivation of those doing the research. Basic research is by definition that research "in which the primary aim of the investigator is a fuller knowledge or understanding of the subject under study, rather than... a practical application thereof." In making these surveys there is a quibble about "general-purpose" and "mission-oriented" research in the underlying definition. But this aside, the key to their definition is in what is presumed to be the motivation of the investigator. But until it has been established that these declarations of motives are indeed associated with research results, that is, in the one case they make basic contributions and in the other they do not, the motivational definition is an act of faith, at best a "working hypothesis."

research administrators. Nor do scientists and scholars really know in the sense of having correct prior knowledge of which questions will lead to basic results. What is in fact *basic* research is an ex post evaluation; basic research is research that did in fact make a fundamental contribution to knowledge. The lesson to be drawn from the work of those who have succeeded in doing basic research is that there is no royal road that leads to new knowledge. Moreover, it is presumptious to say, "these are the right questions"; the unknown inherent in any future research that will prove to be rewarding makes such a statement absurd.

Let me anticipate a criticism of the preceding remarks. Some may argue: "While these remarks may be accepted as applicable to the prestige sciences—physics, chemistry and biology—they may not be relevant to research in economics, because economics is different by virtue of the fact that it is a study of the social behavior of people." It will also be said that the contributions of economics are, above all, in the area of policy and that competent lay leaders who are concerned about policy have for this reason special qualifications for identifying important policy questions.

Questions pertaining to national policy have, of course, long been in the forefront in economics. A strong case could be made for the view that much of what we think of as economics had its origin in response to major unsettled policy questions that attracted competent minds with a talent for economic analysis. Three such questions come readily to mind. In England, the difficulties of growing enough food domestically as industrialization proceeded was a major factor, no doubt, in inducing Ricardo and other English economists of that period to clarify the underlying

costs conditions and the implications of freer trade. The mass unemployment of the thirties challenged, among others, Keynes; and his thinking about economic instability added a major dimension to economics. The large, continuing adjustments in resource allocation associated with economic growth in high-income countries, notably the adjustments required in agriculture under modern conditions are also attracting the attention of economists.

Unsettled policy questions as comprehensive as those referred to above were never nicely formulated and neatly packaged ready for research. They were at the time a jumble of ideas. Only later, in retrospect, are they euphemistically referred to as clear and cogent issues in the intellectual climate of the time.

No Paucity of Policy Issues. A mere mentioning of some of these issues will serve to show that the economic component need not loom large in some of them. Public discussions of school policy range from such basic constitutional questions as the separation of church and state and the integration of schools to such trivial issues as the readoption of the McGuffey Reader by a local school board. While economists can help clarify the underlying issues of the old, continuing debate about federal aid for education, these issues cannot be settled by economic analysis alone. The issues associated with contract research and research grants in providing public funds to universities are predominantly not economic in character, although funds for research compete for teaching talent.

The growth in population makes it necessary to increase the number of classrooms. Schools must adjust to the shifts in school-age population that are a consequence of the vast amount of internal migration. People want more and better schooling as revealed in the aspirations of parents and students in their demand first for universal elementary schooling, then for high school education, and now for higher education for a large and increasing proportion of young people. These developments raise some economic issues that matter. So do scholarships, whether supported by private or public funds, aid to depressed areas for schooling to retrain adult workers, the support of vocational schooling, and still others.

But the main public concern pertains to the continuing transformation of schooling and the educational establishment. As Cremin [111] in his brilliant historical study of the period between 1876 and 1957 shows, this has long been a major public purpose throughout the United States. Education and democracy have been closely linked in the trials and errors underlying the public effort to improve the schools.

From Economics to Policy. How much traffic is there on the road that runs from economics to policy? To return to some of the broad economic policy issues already discussed, the intellectual foundations for free trade policy were built by economists. So was the rationale for modern fiscal and monetary policy. Similarly, economists who are analyzing the investment attributes of education are laying the *foundations for an economic growth policy which assigns a major role to schooling and to the advance in knowledge that is won by those in the educational establishment.* In a concluding note on policy in "Investment in Human Capital," I [67] have elaborated in some detail on these and related issues.