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**Skills, Innovations and Values:
Future Needs for Postsecondary Education**

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Skills, Innovations and Values:
Future Needs for Postsecondary Education

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ABSTRACT

We discuss the current context in which colleges and universities find themselves and then speculate about the future state of the nation and of its educational needs. The current context is summarized in an examination of trends in revenue sources and charges for different groups of higher education institutions, trends in the type of tuition discounting, and trends in the postsecondary education destinations of students from different income backgrounds. The future speculation falls into three broad headings: skill development and professional training; research and innovation; and values education and social criticism.

In this paper we speculate about the future state of the nation and of its educational needs. We approach this task with diffidence, aware of no evidence that shows a positive correlation between the confidence of observers' predictions of the future and the accuracy of those predictions. Moreover, our own track records as forecasters give us pause -- neither of us, for example, predicted that Newt Gingrich would become Speaker of the House, and both of us predicted there would be a winning team in the 1994 World Series.

The strong positive reason for undertaking such a risky exercise in futurology is however clear: postsecondary education exists to serve a variety of human and social needs and purposes. To begin a discussion with these external requirements may counterbalance the natural tendency for discussion to focus on the needs and demands of postsecondary education itself, as those look from inside the enterprise. Yet it is important in viewing these issues to keep in mind the considerable changes that have gone on within the postsecondary sector itself in recent decades, changes in the financing and clienteles of various institutional types that themselves raise issues for the future role of postsecondary education. We therefore begin by discussing this context. We follow this by addressing future social and economic needs for the services of postsecondary education, under three broad rubrics: skill development and professional training, research and innovation, and values education and social criticism.

CONTEXT: RECENT TRENDS IN POSTSECONDARY FINANCING AND ENROLLMENT

Much of our own recent work on higher education economics has focused on some striking patterns of change in postsecondary education, some of which have, we think, been either ignored or overlooked by higher education observers. Here we highlight some major points in summary form. We focus on three areas: trends in revenue sources and charges for different groups of higher education institutions; trends in the type of tuition discounting; and trends in the postsecondary education destinations of students from different income backgrounds.

REVENUE SOURCES AND STUDENT CHARGES

Our decade-long look at the revenues and expenditures of colleges and universities has revealed some remarkable shifts in the financial basis of public colleges and universities. Although some observers have dismissed public higher education's recent financial woes as temporary by-products of the recession of the early 1990's, our data indicate that the squeeze on state appropriations for higher education began to set in by the mid-1980's. Real declines in per-student appropriations were experienced by all public higher education sectors (research/doctorate universities, comprehensive universities, public liberal arts colleges, and community colleges) over the 1986-87 to 1990-91 period. Given the large and growing demands on the financial resources of state governments coupled with continued resistance to tax increases in the nation, it would be naive to expect any sustained improvement in state fiscal support of higher education in the foreseeable future.

One response of public institutions to these fiscal pressures has been to turn increasingly to tuition and fees as a revenue source. Since the late 1980's, percentage increases in public tuition have consistently outpaced private tuition increases. The worry about this trend is whether needy students are being "held harmless" -- whether increases in public tuition are being targeted on those students who can afford to pay. If not, the progress we have made over the past three decades in terms of access to higher education for low income students is under threat.

These facts point to significant trends in affordability and financing that influence our view of the future of higher education and of the economic and social context in which it operates. The affordability question is of particular importance given the economic and social roles higher education plays in our society.

TUITION DISCOUNTING

Many observers have noted the rapid increases in private colleges and

universities' use of institutional financial aid spending to bid down the price of their product, in effect discounting the quoted tuition price. It has been harder for some observers to appreciate that at most institutions this phenomenon has less to do with any institutional desire to use revenues from more affluent families to subsidize the tuition costs of less affluent families than from a simple absence of enough full-pay customers to pay the bills. As we will note below, the loss of students from high income backgrounds has been particularly pressing at private four-year colleges.

An aspect of this tuition discounting phenomenon that has received considerable journalistic treatment but less systematic statistical investigation has been the role of non-need based or "merit" aid in the tuition discounting picture. In a recent study, we examined changes from 1983-84 to 1991-92 in the growth of need-based and non-need based grant aid at both public and private colleges and universities. We found that non-need based grants increased quite rapidly over the whole period, 13% per year per enrolled freshman after adjusting for inflation. This is faster than the rapid 10% annual real increase in need-based aid we observed over the period. As of 1991-92, non-need based aid accounted for more than a fifth (21%) of all institutionally-funded grant aid at private institutions, and for well over half (56%) of all such aid at public institutions. Our evidence further suggests that, while non-need-based aid has historically been most prominent at the least selective institutions in both sectors, its use is increasingly spreading into the more prestigious and selective parts of the higher education universe (although apparently the most selective private institutions have continued to hold out against it).

Heavy tuition discounting and growing use of non-need based aid may in some measure be transitory phenomena. Numbers of eighteen-year olds are now at a historic low, and the intense competition for students that these trends reflect may ease somewhat as numbers of high school graduates increase over the next two decades. Yet not too much comfort should be derived from these thoughts. The recovery of numbers is slow, and it may prove hard to put the

tuition discounting genie back in the bottle. This is partly true of merit aid competition, where institutions, once having gone down that path, will hesitate to yield an advantage to their rivals by backing off.

As with trends in public higher education finance, we worry especially how these trends may impact on access and choice for low-income students, as tuition discounting increasingly focuses on middle-income and "merit" students.

DESTINATIONS OF STUDENTS BY INCOME GROUP

Trends in gross price, need-based aid, and merit aid all affect the affordability of different types of higher education for different types of students. While a great deal of attention has been paid by higher education researchers to the question of "access" -- whether students from various economic backgrounds attend college, less attention has been paid to the question of "choice" -- where do these students go. We have just completed a study on the distribution of college students by income background in an attempt to address the often elusive issue of choice in higher education.

Much of the popular discussion regarding where students go involves middle income students. It is often suspected that students from middle income backgrounds have been most affected by the considerable real increases in tuition at private colleges and universities. Students from lower income backgrounds qualify for need-based financial aid, lessening the chance that these students experience an affordability problem. Students from upper income backgrounds receive a different but analogous form of financial aid -- parental contributions that do not require major proportions of available annual incomes. But, the story goes, when tuitions rise faster than other economic indicators, students from middle-income backgrounds are forced to switch to less costly educational alternatives.

Our study of the income backgrounds of American college freshmen over the period 1980-1993 casts doubt on parts of this analysis. In one sense, there has been such a melt: the share of middle income students (defined as

the group with real family incomes of \$30,000 to \$100,000 in 1992 dollars) in all of higher education has declined. Our data cannot tell us whether this overall decline represents changes in national income distribution (fewer families in the middle class and more either rich or poor as a result of the Reagan-Bush years) or differential changes in enrollment rates (middle income students increasing their college enrollment rates less than students from richer or poorer families). But what most people seem to mean by middle income melt is something different from this: a redistribution of middle income students among categories of institutions, and especially from private to public institutions. Our data do not find middle income melt in this sense over the 1980-1993 period. In 1980, 21.5 percent of middle income students were enrolled at private four-year colleges and universities; in 1993, 21.2 percent were in those institutions.

The most striking movement among middle income students has in fact been within the public sector, with a sharp decline in the share of middle income students at public two-year institutions, offset by growth in the share of middle income students at public four-year institutions. Indeed, one of our most interesting findings is the increasing representation of low income students at public two-year colleges, and the declining representation of middle and upper income students there. It is of course important to remember that the relatively young, first-time full-time freshmen represented in our survey are not the predominant clientele at community colleges. Nonetheless, these data do seem worrisome. They suggest that the combined effects of tuition increases and limitations on federal student aid may be impairing the ability of low income students to gain access to institutions other than community colleges.

It is revealing also to look at changes in the enrollment patterns of upper-income students. Higher-income students in 1993 were more likely to attend universities (either public or private) than they were in 1980. These increases for universities (and for public four-year colleges as well) came largely at the expense of private four-year colleges, whose proportion of

high-income students fell from 26.7% to 23.6%. Meanwhile, the proportion of middle-income students who attend private four-year colleges has been basically stable from 1980 to 1993. Although leaders at these schools have been vocal in talking about middle-income melt, it appears that what they have experienced is in fact upper-income melt. It seems likely that this loss of full-pay students is a significant part of the explanation for the growing investments of these schools in tuition discounting and non-need based aid discussed above.

GROWING STRATIFICATION?

Among the implications that can be drawn from these various trends, one stands out that is of special importance for higher education's future role. This is a pattern of increasing stratification in several senses. Low-income students are increasingly concentrated in community colleges, perhaps because a pattern of rising tuitions not matched by student aid increases is pushing the cost of other public alternatives out of reach. Private universities are pulling away from private colleges in their ability to attract high income students. Our study of non-need based aid also contains hints, which we believe are corroborated by other evidence, that the most selective and prestigious among private universities and liberal arts colleges are increasing their distance from most other private institutions, which are locked in a tense struggle for enrollment and resources.

FUTURE NEEDS

Since World War II, postsecondary education on a massive scale has made itself well-nigh indispensable to the normal workings of our society -- gatekeeper for the professions, training ground for all manner of skilled work, core generator of scientific and technological advances, and locus of scholarly endeavor and cultural critique. At the same time, the principle of universal access to higher education has become an essential symbol of the nation's commitment to equality of opportunity.

If we went back 60 or 90 years, postsecondary education played a much less conspicuous role in society. With many fewer Americans attending colleges and universities, the role of higher education in preparing the American workforce, while still strategic for the best jobs, was much smaller. Scientific research relied more on the passion of individual researchers and haphazard funding by private donors than today, when a major share of the funding of leading research universities is supplied by federal research support. Moreover, the enterprises of literary, social, and political criticism were less centered in the academy than they are now -- the role of the independent scholarly critic, an Edmund Wilson, a Henry Adams -- has waned substantially in this century. Nor was the commitment to equal access present in the early twentieth century -- higher education was understood and accepted as an option only for a relatively privileged subset of the population who received the right kind of high school education.

It's inconceivable that postsecondary education will return to the much more limited scope and ambition of the pre-World War II days. The interesting questions concern how postsecondary education will need to evolve to continue to fulfill its much expanded roles. Thinking on the very broad scale our topic requires, we need to reflect on how the nation's need for the various outputs associated with postsecondary education are likely to change in coming decades, and on the extent to which those needs can (or should) be met by institutions other than colleges and universities. This latter point is important. Higher education both competes with and complements other social institutions in providing what might broadly be called "intellectual capital". If, for example, America's elementary and secondary schools improved their performance dramatically, the need for certain aspects of existing postsecondary education would be greatly reduced. Similarly work-related training is now provided both in academic and workplace settings; an expanded role for workplace-based training (perhaps analogous to German-style apprenticeship systems) would reduce the need for work-related training in postsecondary institutions. Governments and corporations compete with

universities in the conduct of research; their relative roles are very much in flux right now.

Although much is sure to happen that we cannot anticipate, we foresee two major trends as having powerful impacts on what society will demand from universities and colleges. One is ever more rapid technical change. The stunning developments over the last decades in areas from micro-computers to biological engineering are only beginning to reveal their consequences. Many of these developments not only have generated and will continue to generate significant technical changes -- they also provide a powerful engine for the further acquisition of new knowledge. Second is the increasing internationalization, even globalization, of the U. S. economy and society. Abetted by rapid advance in communication technology, it's clear that future citizens will need to be comfortable with a much broader range of languages and cultures than they have traditionally required to live their daily lives. Higher education will play a central role in preparing citizens for this world.

We organize our thinking about these topics around three broad headings: skill development and professional training, research and innovation, and values education and social criticism.

SKILL DEVELOPMENT AND PROFESSIONAL TRAINING

Postsecondary education contributes to labor force skills at a variety of levels. Considerable evidence exists that the economic returns to educational investments have risen in the last fifteen years. This is reflected in a widening gap between the earnings of those with high school educations and those with higher levels of education. These high returns appear to apply at all levels of postsecondary education -- the earnings gap has widened between those with some college and those with none as well as between college graduates and those with some college.

What accounts for these higher returns? Are they likely to prove a transient phenomenon? One source of the higher returns is temporary -- a result of changing demographics. Returns to higher education were depressed in the late 1960's and early 1970's as a result of the very large cohorts of college-educated workers who appeared in the labor force at that time, as the baby-boomers matured. Since then, the decline in numbers of young persons entering the labor force has produced something of a shortage of young college-level workers, and this has contributed to increased returns. The impact of this force can be expected to diminish as the "echo" of the baby boom leads to larger cohorts of young people in the decades ahead.

This supply side effect, however, does not appear to be the main explanation for higher returns. Rather, most of the action has been on the side of the demand for labor, and appears in fact to be a result of the rapid pace of technical change noted above. Two economists, Larry Katz and Kevin Murphy, have shown that rising demand for better educated workers has been driven by the relative expansion of industries which have higher demands for educated labor. That is, those parts of the economy which rely less on college-educated labor (farming, heavy industry) have declined in importance, while industries which use more college-educated workers (financial services, "high-tech" manufacturing) have grown.

Continuing rapid technical change implies that this trend is likely to continue, and thus the economic payoff to higher levels of education is likely to continue to be high for the foreseeable future. Hence, from the standpoint of economic efficiency and growth, the nation is likely to require high levels of investment in human skills. This broad generalization, though, leaves many crucial questions open.

EQUAL OPPORTUNITY AND SKILL PROVISION

One central one concerns the impact of rising demands for human skill and knowledge on economic inequality. As just noted, the high returns to

education over the last two decades have produced a growing gap between the wages of more and less educated workers. Robert Reich has been prominent among those who see this gap evolving into an increasingly unbridgeable and dangerous social divide between what he calls "symbolic analysts" and other categories of workers. There is a lot of evidence from international comparisons that our educational system does relatively well by the highest achieving students and that our largest failures, cognitively and later economically, are with students in the bottom half of the distribution of academic achievement. One way of combating this inequality is to invest more in the skills and knowledge of those people who do not under present arrangements attend four-year colleges and universities and attain bachelors' degrees.

How successful, and how costly, such a strategy might prove to be is hard to gauge. We know that the economy now produces very few good jobs for low-skill workers, and that trend is likely to continue. One big question is how the demand for "middle-skill" jobs will fare -- will there be enough good jobs for computer technicians, medical assistants, and bookkeepers to make investments in training in such fields pay off? There is also uncertainty about where such training is best done. Some have argued that much improved vocational preparation in the last two years of high school would be more successful in reaching the group of high school drop-outs and near drop-outs who face the worst future. Others have claimed that workplace-based training, perhaps beginning before the end of high school and continuing in apprenticeship programs, holds most promise. Currently much of our investment in postsecondary, prebaccalaureate training happens in community colleges and proprietary trade schools, financed largely by state governments (in the case of community colleges) and by federal grants and loans (in the case of proprietary schools). Judgments about the quality and effectiveness of this training effort are quite mixed.

Nobody really has answers to these difficult questions. But at least for the sake of argument, and with some sense of conviction, we would put

forward the following points. First, improved vocational training will not take us to the promised land, in the sense of greatly strengthening the economic contributions and earnings of educationally disadvantaged high school students. The educational deficits experienced by disadvantaged youth begin even before grade school starts, and intervention in adolescence cannot in most cases fully recover those deficits. But second, some training is better than none. In general, evidence suggests that an extra year of schooling improve earnings for students at all levels of academic aptitude and years of school. Job prospects will likely not prove rosy for students with "middle skills", but they are sure to be better than for students with low skill jobs. Finally, the best investments, if we can figure out how to do it, would be in grade school and middle school. Big cognitive gaps among students have opened up by the ninth grade, and everything after that is playing catch-up.

THE CONTINUING NEED FOR LIBERAL LEARNING

Another set of questions concern more advanced training, at the bachelors' level and in professional and academic graduate schools. What are the implications of more rapid technical change and of globalization at these levels of education? Although some might argue that these trends will increase the payoff to more highly specialized training, our view is the opposite: these trends are likely to increase society's need for liberal and general education. Rapid technical change implies rapid obsolescence of technical knowledge. All those computer programmers who learned COBOL and FORTRAN in the 1970's have had to learn this lesson. Indeed, it is not implausible that advances in computer technology will render the very profession of computer programming as we have known it obsolete in the next twenty years: computers are increasingly capable of writing their own programs (and even designing their own successor machines) on the basis of more general instructions provided by users of what the computer needs to do.

This just illustrates a more general point: the technical content and

demands of people's jobs change rapidly under the pressure of technical developments. This will obviously bolster the social need for continuing education. But more basically, it implies that what people need to acquire in school is the ability to adapt, to be flexible, and to learn new things -- which are of course exactly the capacities liberal and general education aim to foster. No doubt society will want the colleges and universities to figure out how to develop those capacities more effectively and reliably, but our sense is that it is this, rather than highly focused technical education, which will be the most important future demand.

The trend toward globalization reinforces this point. Even for relatively narrow business purposes, when dealing with citizens of another country, it is an obvious advantage not *only* to speak the language but to have some understanding of cultural expectations and norms. And there is every reason to expect that cross-national communication and interaction will extend well beyond narrow business purposes. Economic and social issues from pollution to the spread of AIDS are inherently global, and will increasingly require a search for common understandings and common values. Higher education, in an extension of its traditional role in liberal and general education, will be expected to help promote both respect for difference and this search for common values.

RESEARCH AND INNOVATION

There is little doubt that the social demand for scientific research and technical innovation will remain high, but there is some uncertainty about the likely and proper role of higher education in the research effort. It is of course crucial to remember that in thinking about large scale scientific and technical research, one is addressing only a relative handful of U.S. universities -- probably fewer than 200. For other higher education institutions, research serves largely to complement their teaching function, and many of these institutions are important to the national research effort

as producers of scientists. But the big national decisions about investment in basic scientific research focus on the major research universities.

In thinking about the social need for university research in the coming decades, we have two principal concerns. One is whether the nation will attend sufficiently to the long gestation period and the essentially public nature of basic research. Anxieties about the nation's economic condition have led to an increasing emphasis on research that is visibly connected to economic and industrial payoffs. But the basic discoveries that enable practical technical advances hardly ever result from such pragmatic efforts. To foster fundamental discoveries like the structure of DNA, the physics of the transistor, or superconductivity require that those investing in the research accept that the practical payoff will be highly uncertain and long in coming.

No business will make these investments, certainly not in the present highly competitive environment. Such efforts require public funding, and they are a kind of research in which universities have a clear comparative advantage, since such research complements so well the love of ideas and the curiosity about nature that animates advanced study in the sciences. It is far less clear that universities have any comparative advantage in shorter horizon, more directly practical research -- and indeed it is far from clear that the government should be financing such research anyway.

This brings up a second and closely related point. University researchers, perhaps especially *in* the biological sciences (and economics!) may see very practical payoffs indeed from their research. By incorporating and by patenting findings, a number of researchers have made themselves millionaires. Universities themselves are increasingly interested in gathering the financial returns from the business end of the research enterprise. Many troubling incentives are created by these trends. The openness, sharing and public critique that are essential to the advance of science are likely to be inhibited by edginess about patentable ideas. (we

don't mean to be naive: there is plenty of secretiveness promoted by the anxiety to claim priority in discovery of new ideas, and there is plenty of overlap between the desire for fame and recognition and the desire for money in motivating intense research effort.) Moreover these profit opportunities are again likely to divert university researchers from the areas where they have a social comparative advantage: the search for fundamental discoveries that lack immediate economic payoffs.

There are serious institutional problems to be addressed here in seeing that university research fulfills society's needs in the future.

VALUES EDUCATION AND SOCIAL CRITICISM

Although not at first blush an economist's kind of topic, we believe it is of first-rate importance in thinking about social needs for higher education to keep in sight the role of colleges and universities in education about values. Both globalization and rapid technical change pose challenging problems for American values and traditions. A key example is our growing technical ability to prolong life. We will, individually and collectively, be forced in the future to *decide* matters of life and death that historically have been out of our hands. It is not an exaggeration to say that we have barely a clue about how to do this responsibly, humanely and morally. Problems of similar depth arise as we come as a nation increasingly to recognize ourselves as part of a world of communities. Both understanding and valuing other cultures (and diverse communities within our own borders) and finding legitimate grounds for criticizing or reforming cultural practices that violate certain core values are huge challenges facing us.

Colleges and universities are now in the U.S., both more than in other countries and more than in our own past, the place where systematic and open-minded reflection on these matters happens. There are few social needs more important than maintaining, or sometimes creating, traditions of searching critique and civil discourse about these fundamental issues.

CONCLUSION

Right now, the nation seems to be withdrawing from its historical commitments to investment in higher education, as governments press for short-run financial savings. In the long run, however, both the economic and the social well-being of the nation depend importantly on intelligent and forward looking investments in the skill development, search for innovations, and reflection of values that lie at the core of the higher education enterprise. This paper has aimed to contribute to a much-needed discussion of what the nation will demand from its colleges and universities.

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