

# **The Workforce Requirements of an America**

## **Prepared for the Twenty-First Century**

### **Replacing Outmoded Ways of Doing Things with Better Ones**

A short while ago, according to reporter William McWhirter (*Time*, November 9, 1992), the woe that's seized upon General Motors was only the most ominous manifestation of a shroud that hovered over the whole of Detroit. Ford too was slumping under the recession. And Chrysler "seemed to have everything going wrong." Its products were getting bad reviews, its finances were in shambles, and its Chairman, Lee Iacocca, was blaming most of his difficulties on the advantages Japan's automakers were said to enjoy over their coevals in the United States.

So what did Chrysler do to reverse its bad fortunes? After subjecting itself to a period of "unsparing self-examination," the corporation sent a team of young executives to the competition's Honda plant in Marysville, Ohio. There, thanks to their hosts' "political courtesy" (the phrase is McWhirter's), twenty-five Chrysler representatives scrutinized a phenomenally successful rival's "assembly methods" and devoted a year to studying the "corporate culture" that has made Japanese industry so proficient.

The most immediate outcome of the exercise was "a greater emphasis on customer satisfaction" at Chrysler. This led to "an increase in continual training," and to "the empowering of shop-floor workers to make decisions." Drawing on the principles T. Edwards Deming had introduced to Tokyo four decades earlier, Chrysler streamlined "its bureaucratic structure," sliced away several strata of "supervisors," and terminated "the turf wars between separate divisions."

Meanwhile the company "enlisted supplier support to make design and engineering changes that would add value and boost productivity." By heeding the most feasible of the 3,900 suggestions it received from the field, Chrysler reduced its costs by "an estimated \$156 million."

But that wasn't all the corporation's executives did. They also "spent money where it counted, notably on a \$1 billion technical center where teams are developing a new generation of compact cars, among other creations, with little meddling from top brass." What's more, Chrysler invested \$30 million in "a training blitz last summer for its dealer and service networks, staging two-day workshops to prepare them" for the manufacturer's "new LH cars" and for "the high expectations of drivers" who had "grown accustomed to imports."

The bottom line? That will finally be decided by the nation's consumers. But *Automobile* magazine is already confident enough to proclaim America's smallest automaker "the hottest company in the car business." At the moment, *Time's* McWhirter says, Chrysler is "the only profitable member" of the Motor City's "Big Three," and its prospects look bright.

The turnaround at Chrysler is yet another illustration of Total Quality Management in action. The steersmen of a vessel that had lost its bearings came to their senses, corrected their course in the nick of time, and are now accelerating toward the port of their choice at a clip that could scarcely have been dreamt of five years earlier.

And thereby hangs a tale for the contemplation of those who supervise America's schools, colleges, and universities. It would be foolhardy to infer that a comeback as striking as Chrysler's can be replicated in our own realms without tormenting disruptions in the social, political, and organizational contexts that circumscribe the maneuverability of today's educators. But it would be equally shortsighted to think that what's happened at Chrysler is a remote occurrence with nothing to teach the rest of us.

### **Education and Career Training in Countries that Rival the United States Economically**

During the last decade Americans have become increasingly curious about how our educational institutions and training facilities stack up against those in other countries. The primary motivation for our interest is, of course, economic. We've been forced to recognize that the future we and our children claim for ourselves will depend upon the kind of thought we take for the morrow. We've also come to see that a number of the countries with whom we contend for world markets are situating themselves to make the new dawn theirs.

"Not so long ago," according to Ray Marshall and Marc Tucker (*The Washington Post*, November 1, 1992),

a young American could leave high school with or without a diploma, join a union, go to work in one of our basic industries, and confidently expect to become a full-fledged member of the middle class. No more. Now, that same worker is competing directly with workers half a world away who also have access to the most advanced machinery on the globe, and who are willing to work for a dollar and a half a day.

To overcome the advantages that long hours, low wages, and advanced machinery can give to low-skilled workers, higher skilled workers must produce better quality, work more productively, and respond more quickly to changes in consumer taste. And the only way to do that is for ordinary front-line workers to work smarter.

All over the world, the best firms are assigning to front-line workers duties and responsibilities that American businesses typically reserve for managers and professionals. Because workers actually making products or dealing with customers are trained to do

it right the first time, respond promptly to problems, and figure out how to make constant improvements, firms can get rid of many layers of management. These firms are competing on quality and productivity, not wages. Their reward is high pay for everyone.

Marshall and Tucker note that "Germany and Japan have taken the lead in worker development." Both nations have "economic policies" that are designed to "produce high wages." For example, the Germans begin by assuring that "their children arrive at school healthy and ready to learn. Once in school, all children, not just those going to college, are expected to perform at high levels." Three-quarters of them eventually "take national examinations" that call for rigorous "standards of academic accomplishment," and about twenty percent proceed through academic (college-preparatory) upper schools to degrees from German universities.

While in school, all German children except those in academic high schools are required to participate in a formal learning program about industry. At about the age of sixteen, 85 percent of those not in academic high schools enter the two- to three-year apprenticeship programs, the standards for which are set mainly by industry and are uniform throughout the country. The student enters into an apprenticeship contract with a firm that provides a highly structured program of on-the-job training (about 3 1/2 days a week), state-provided vocational training (1 1/2 days a week), and a firm-paid training wage that increases as students progress through the program. Students get a journeyman's certificate -- their ticket to employment -- only when they pass a demanding written and practical exam at the end. By eighteen or nineteen, these kids have a very high level of academic and vocational skill and know what it means to work.

Marshall and Tucker observe that "Fully one-third of German university-trained engineers came up through their apprenticeship system and then attended university, a path that would be virtually unthinkable for most U.S. engineers."

In Japan as in Germany, "child poverty is almost unknown, and the support for education from families is legendary." Because of the longer academic year in Japan (240 days, as compared to a 180-day norm in the United States), moreover, the recipient of a Japanese high school diploma "has completed as many hours of school as the average American college graduate, and probably knows a good deal more math and science."

It's amply documented that Japanese students work harder -- and do their out-of-class exercises much more conscientiously -- than their American contemporaries. But it's also noteworthy that Japanese youngsters are taught by well-respected and appropriately compensated professionals, the "highest paid civil servants in the land." Everything in their experience -- including the prodding they receive from parents who want to be sure their children succeed -- tells Japanese youngsters that how they acquit themselves in the classroom is not a matter to be taken lightly.

When we add up all these factors we begin to register why Japan's "educational achievement, not just among those going to college, is probably the highest in the world."

Many of us envisage Japan and Germany as societies with identical orientations to workforce preparation. They are in fact similar, but there are also significant variations between the two countries. According to Marshall and Tucker, the formal vocational system plays a smaller role in Japan. "Major Japanese employers want entry-level employees who can learn to do anything they might be asked over a working lifetime," so they seek young men and women who have a sound general education rather than the more funneled pedagogy that future industrial workers receive in Germany.

"Admission to high schools in Japan is competitive," say Marshall and Tucker. "Big firms recruit entry-level labor from those high schools that have demonstrated that they can supply graduates with the needed skills." For this reason students apply themselves diligently "in middle school to get into the high schools that match their job ambitions." Once they finish school, "Japanese kids, like their German counterparts, can look forward to a lifetime of continuous education and training."

Marshall and Tucker recall their visit to a Toyota factory where "freshly minted high school graduates working on the assembly line were being provided what in the United States would be a college-level course in digital electronics as part of the on-the-job training program that every line worker gets." In order to supply schooling of this complexity, Marshall and Tucker say, companies in Japan and Germany are called upon to demonstrate instructional expertise as well as industrial efficiency. "In Germany," for example, "a successful applicant for a license to open a business in most fields must be qualified as a master teacher of that subject. Similarly, in big Japanese firms, one of the most important qualifications to become a foreman is the ability to teach the skills required by one's team members."

In comparison to those in Germany and Japan, U.S. businesses demand relatively little of their employees, and do almost nothing to keep them abreast of the latest developments in their spheres of endeavor. This evokes no wonder in Marshall and Tucker, because the United States "has no national education standards" to begin with, and "requires less than an eighth-grade level of literacy" even "for the majority of kids who go to college." Given this situation, it hardly needs to be reiterated that American corporations have learned to accommodate themselves to minimal knowledge and limited malleability in those who enter the workforce directly out of high school.

In keeping with the low expectations that have come to characterize the U.S. attitude toward education and career training, most of our school districts pay teachers "at the bottom of wage scales for workers with college degrees." On a national scale, we invest significantly less in our elementary and secondary schools than do "most other industrial countries." By contrast, "Germany and Japan pay their teachers well and put much of their human investment capital into their future front-line workers."

And while America "has no system at all for the transition from school to work," Marshall and Tucker note that Germany and Japan "begin that transition in elementary school, and enable the vast majority of their adolescents to acquire strong academic skills, strong vocational skills, and,

most telling, actual employment in leading firms by the time they are eighteen or nineteen. In the United States education and training of most front-line workers ends when they are first employed -- when training is just beginning for most German and Japanese workers."

In an editorial on "Lessons from Japan" (*Basic Education*, March 1992), the Council for Basic Education's Patte Barth reinforces many of the arguments that Marshall and Tucker have been advancing in books such as *America's Choice: High Skills or Low Wages!* (Rochester: National Center on Education and the Economy, 1990). Barth points out that the precollegiate educational structure that serves the Japanese so well "was adopted part and parcel from the U.S. following World War II, as was the idea of the common school that supports it. In addition we both look towards our schools to provide the foundation for equal opportunity in society -- to level the playing field, so to speak -- so that ideally merit, not class, will determine success."

But there is a telling disparity, Barth observes, "in our educational philosophies about the capacity for children to learn. Here in the U.S., educators and parents speak of 'ability' in the belief that an individual child's potential for academic achievement is somehow predetermined and probably finite. A typical objective in our schools is 'to educate each child to his or her fullest potential.'"

From the earliest grades, American children are sorted into "ability groups" of low- to high-achievers with correspondingly low to high expectations. Thankfully, this kind of tracking is being questioned as possibly self-fulfilling, and schools across the country are beginning to move towards more heterogeneous groupings. Nonetheless, "ability," however faulty its application, remains a firmly held tenet of American education. In contrast, the Japanese rarely, if ever, attribute students' achievement to "ability"; rather, their educators and parents encourage and reward "effort."

"True to this belief," Barth notes, "Japan has a single-tracked system for students through approximately age fifteen. This system is structured so that all students will master the curriculum established by the central Ministry of Education. There are no ability groups. Programs for the 'gifted and talented' do not exist. Teaching is done to the highest expectations, not the middle. The only difference recognized among children is that those who need it are provided with more help to achieve."

Barth sums up by saying that

The widely reported international comparisons of students' achievements confirm the success the Japanese have had. Not only are their students overall world leaders in mathematics, science, and geography, but they show much greater uniformity at a high level of attainment. Furthermore, 94% of students leaving compulsory school at age fifteen perform well enough on exit exams to continue on to upper secondary school, with the majority (73%) enrolling in academic schools which emphasize university preparation. The high staying-on rate of Japanese students is made even more significant by the fact that these fifteen- to eighteen-year-olds must pay tuition for the privilege.



According to Dennis P. Doyle of the Hudson Institute (quoted in *America's Leaders Speak Out on Business-Education Partnerships*, a 1989 pamphlet of the Washington-based National Alliance of Business), "the Japanese are the first people in history" to bring "to fruition a great American and democratic dream, and that is a successful mass education." Japan has come up with a way to pull "underachieving students into the ranks of the well-educated, creating a greater pool of talent for business to draw upon."

Business isn't everything, of course, and there are other, loftier reasons for America to upgrade the instruction it provides its citizens. Until we regenerate our capacity to sow and sustain a healthy economy, however, we'll find it harder and harder to accord those other reasons the priority they merit.

It's widely held that America's leading colleges and universities measure up quite handsomely when set beside comparable institutions elsewhere in the world. They're by no means perfect, though, and unless they attend to the internal problems their critics have singled out for special mention they could soon find themselves in the same kind of predicament that now jeopardizes General Motors. But while they reassess and rebuild their own programs, they need to remain mindful that their well-being, if not their very future, will also depend upon the part they play in reconfiguring instructional operations they tend to dismiss as unconnected to, or even in competition with, their own. It's now obvious that they must do what they can to help the U.S. devise a genuinely functional elementary and secondary school system. It's also becoming manifest that they must do something to help the nation establish what Lester Thurow describes as a rationally "organized postsecondary education system for the non-college bound."

In *Head to Head: The Coming Economic Battle Among Japan, Europe, and America* (New York: William Morrow, 1992), the Dean of M.I.T.'s Sloan School of Management says that virtually every industrialized society other than the United States invests first in providing all its members a solid elementary and secondary school base, and then in imparting sophisticated "postsecondary skills" to those who do not pursue college or university degrees. According to Thurow, "Britain, France, and Spain spend more than twice as much as the United States" on non-collegiate postsecondary training, Germany "more than three times as much," and Sweden "almost six times as much." Thurow quotes a German executive who says that "the problem with the U.S. is that there are too many people in college and not enough qualified workers." America "has outstanding universities," this leader is quick to volunteer, "but it is missing its middle."

Analysts such as Thurow, Marshall, and Tucker are undoubtedly correct in their indictment that the United States does too little to spotlight and deal with the difficulties that arise from inadequate cultivation and deployment of its vital "middle." They may also be right in their suggestion that we're earmarking too much of our educational allocation for the promotion of college attendance at a time when there's greater need for the intensive training that equips personnel with specific categories of technical expertise. There are some who take issue with this argument, however -- demographers, educators, and other social thinkers who believe that we should be encouraging more, not fewer, of our young people to progress from high school to intellectually

broadening liberal arts institutions, but who go on to insist that we should also be making the adjustments required to elevate the completion percentages of those who do enroll in courses of study that lead, or are presumed to lead, to baccalaureate credentials.

Be that as it may, Thurow, Marshall, and Tucker are to be commended for interrogating America's laissez-faire approach to the aggregation of its workforce. Thanks to their projections and those of their colleagues, it is now clear that better coordination, communication, and collaboration are the order of the day if we want a more comfortable fit between the kinds of preparation U.S. citizens receive and the career options available, or feasible, for different types of employees. If we believe it's important to have a full panoply of happily employed citizens, we need to determine what social and educational policies -- and what combination of instructional programs -- will promote that goal most efficiently and put those policies and programs into effect. The one thing we can't afford is to continue our present practice of leaving the future largely to chance.

As we move toward the twenty-first century every sign points to the need for a substantially higher degree of planning and integration in every component of our educational enterprise. Alternatives to systemic thinking and holistic management practices can no longer be indulged. We've reached the juncture Dr. Johnson credited with the power to concentrate the mind, and it should now be as apparent to us as it was to the statesmen Benjamin Franklin addressed in 1776 that if we don't hang together we can all look forward to hanging separately.

### **Assembling an Instructional System That's Right for America**

From the foregoing discussion one might conclude that the United States is doomed unless it imports a complex of educational and training networks from abroad. That, however, would be a grave misreading of the evidence. Even if a transplant were deemed desirable, it would probably not prove acceptable. An organism that flourishes in another social and political environment -- especially one that is less ethnically and culturally heterogeneous than our own -- would almost certainly find an American setting alien. Notwithstanding their many virtues, then, even the most productive of our rivals' instructional systems -- assuming we could re-root them intact -- would be unlikely to yield the kind of fruit from our soil that we'd find palatable.

That being the case, our safest course is to glean as much data as we can about the ecologies of other nations and then adapt to our own context only those graftings from their stems that seem compatible with the nutrients in America's fields and meadows. This is what observers such as Marshall, Tucker, Barth, and Thurow have been advocating, and the wisdom of their counsel was nicely illustrated a few months ago in a Washington gathering of "Pacific Rim Educators" (Associated Press, August 6, 1992).

At the press conference following a Department of Education summit that attracted top-ranking delegates from Australia, Brunei, Canada, China, Hong Kong, Indonesia, Japan, South Korea, New Zealand, the Philippines, Singapore, Taiwan, and Thailand, the U.S. Secretary of Educa-

tion summarized the educators' consensus that there would be nothing to gain from "imposing uniform standards on all our societies." It was quite enough, in the view of Lamar Alexander and his fellow leaders, to share perspectives and concerns and to "learn" from one another while still respecting, and zealously preserving, the distinctions each tradition brought to the table.

Alexander went on to note that while America acknowledges a severe lack of the "rigor" to be found in Japanese schools, Japan perceives its own instructional system as one that has too much rigor for its own good. According to Education Minister Kunio Hatoyama, the pedagogy Japan mandates for its young people is overly regimented. Having realized this, he says, the Japanese are now scheduling more unstructured leisure time for youngsters who'll be healthier and more innovative if they "loosen up a little." The Japanese are also taking steps to reduce the stress their schools put upon rote learning. In the future, Hatoyama reports, Japan's teachers will allot increased emphasis to activities that foster the acquisition of problem-solving abilities.

At the same time that the United States is endeavoring to introduce more coherence and control into its educational offerings, in other words, Japan is modifying its system to infuse more spontaneity and student autonomy into schools and training facilities that have become excessively rigid and austere. Perhaps filmmaker Ron Howard was casting a benign influence on both sides of the Pacific when he produced *Gung-Ho*, his 1980s comedy about the desirability of a "point of balance" -- to quote poet Henry Reed's "Naming of Parts" -- between too much discipline (the extreme to which Japan has been prone) and too little (the flaw that characterizes today's America).

An Aristotelian sense of balance, and a measure of skepticism, self-criticism, and good humor to go with it, will be exceedingly helpful to all of us in the odyssey ahead. The Cold War, we're told, is history. But it would surely be folly to pretend that new conflicts will not continue to replace old ones, and even exceed them in virulence. As our planet grows more crowded, polluted, and biologically depleted, after all, it gets ever more dangerously deficient in life-supporting means to alleviate territorial anxieties and geographical encroachments. And who's to say that the economic dislocations, religious differences, and political divisions that rate page-four stories in 1993 will not become the headlines that usher in a far more sinister millennium than most of us are able to conjure up in our most terrifying nightmares?

The disintegration of the Soviet bloc has created an unprecedented opportunity for the globe's leaders to forge what President Bush termed a "New World Order." His successor brings to the White House a fervent desire to reify that ideal. But as President-elect Clinton has repeated on numerous occasions, it won't be automatic and it certainly won't be simple.

As a society we'll need to stay aware that, like it or not, we're all in this pluribus together. We'll need constant reminders that -- ideally for better rather than for worse -- America is a nation of nations, a melting-pot that demands watchful care to guarantee that its ingredients are mixing smoothly and to prevent it from seething into a volcanic cauldron. We'll need to eschew any impulse to deny or denigrate the diversity that gives our cultural alloy its rich and supple mettle. We'll need to keep our spirits attuned to the harmonies a sage emancipator invoked as



"the mystic chords of memory." And we'll need to be conscious that the arts that stir our souls and nurture our hearts and bind us to all our yesterdays, today's, and tomorrow's are also the human ties that hold us in fealty to our worthiest selves.

Above all, we'll need to recognize that it won't be sufficient to "form a more perfect Union" at home. To be sure, our initial task, in Matthew Arnold's words, is to "be true to one another." But we must remember as well that the durability of what Lincoln called "the American experiment" will be decided by the extent to which the United States is able to maintain, indeed augment, its candlepower as a global beacon. Our shining moments, however fleeting, have always been those in which we transcended our propensity to parochiality and extended our hands to the neighbors beyond our borders.

Heaven knows we've sometimes overreached. And far too often we've misconstrued as helpfulness what other nations have experienced as the clumsy gropings of a people who've ever but slenderly known themselves. Yes, we've erred grievously in some of our attempts to propagate overly provincial notions of economic and political piety. We've destabilized more than one region in misguided efforts to further international stability. And we can be certain that we'll act ill-advisedly again. But with as much humility, restraint, and caution as may be granted us, we should nevertheless rededicate our labors to the quest for what our sixteenth commander-in-chief described as "a lasting peace, among ourselves, and with all nations."

## **Involving Higher Education**

### **More Fully in the Nation's Priorities**

#### **An Expanded Mission for America's Colleges and Universities**

So what must be done to make higher education more integral to the pursuit of our purest purposes?

One step, and possibly the most important one, resides with America's colleges and universities themselves. They know they're being subjected to searing scrutiny; and while they're entitled to complain that much of what they're suffering today is unfair, they're also beginning to concede that a portion of it is merited. If they're intent on regaining the favor they once enjoyed, then, they'll be wise to treat their own blemishes before those imperfections can be targeted and cauterized by unfriendly detractors. The process will almost certainly be agonizing; like others who've undergone a siege of refining fire, however, those institutions that push themselves through it will emerge from the exercise with well-tempered armor, the sterner stuff that discountenances adversaries and wards off malicious assaults.

But of course there's only so much our institutions of higher learning can do to restore themselves to wholeness. Before they can reasonably be asked to shoulder more responsibility -- and raise the efficiency with which they discharge their customary duties -- many of them will need more appreciation, and support, from the society whose burdens they endeavor to relieve.

It's now evident that everyone in the United States will be called upon to sacrifice certain comforts for the general good. If all of America's children are to commence their schooling without the handicaps imposed by poverty, malnutrition, disease, neglect, and domestic violence, someone has to deliver our cities, towns, and rural outposts from the evils that embattle them. If America's youngsters are to receive assistance beyond the Head Start they get through federal funds, someone has to assure that they have safe, clean, and aptly equipped classrooms and laboratories, properly stocked libraries, competent and decently paid teachers and principals, and a dependable infrastructure of family and community services. If America's adolescents are to grow into employable adults and capable citizens, someone must supply them the wherewithal to attain their full maturity.

The "someone" in this litany includes, or should include, higher education. But our colleges and

universities will be able to perform their parts in the national chorus only if they are provided confident and confidence-inspiring direction, and only if their voices and instruments are accompanied by all the others required for an anthem of symphonic grandeur.

Precisely whose voices and instruments those will be, and how they'll be orchestrated, is yet to be seen, but the "New Covenant" we're promised by the Clinton administration will probably feature a corps of initiatives -- among them a long-awaited social program to engage the talents, energies, and patriotic instincts of America's youth -- to address the nation's dissonance. Colleges and universities will almost certainly play a role in defining the scope of these initiatives, as well as in training and providing assistance to those who'll be selected to implement them.

In view of the emphasis his campaign gave to education as an investment in America's socio-economic and geopolitical future, it would also seem logical to expect President Clinton to reinforce the existing links among those executive agencies that will be enjoined to set the pace for instructional reform. At the very least we should anticipate tighter bonds between the Department of Education and such related entities as the Department of Commerce, the Department of Health and Human Services, the Department of Labor, the Department of State, the National Science Foundation, the National Endowment for the Arts, and the National Endowment for the Humanities. We should look as well for a vigorous Secretary of Education, and for a Department whose demeanor is as consultative and collegial as the new President's is reputed to be. If our new leaders are genuinely committed to combatting organizational inertia, and if they mean what they say about encouraging all Americans to come together to deal with problems that concern us all, they'll search for ways to supersede any divisions that hinder the route to a higher vision. Perhaps it's not too much to hope that under their aegis an inchoate tangle of pedagogical strands may finally begin to rearrange themselves into a shapely tapestry.

The era before us will bring trials aplenty for America's colleges and universities, but it should also afford a congenial time to respond to them in a concerted fashion. For those who comprise the higher education community it should be embraced as a period of special opportunity. To appropriate that opportunity, however, the nation's institutions of postsecondary instruction must gird themselves for bigger and more arduous tasks than many of them have become conditioned to undertaking.

It will no longer do for them to plead that they're being put upon. If they wish to reclaim the public trust and "do some work of noble note" -- if they desire to help chart a reoriented republic's voyage to "a newer world" -- they'll need to emulate Tennyson's Ulysses and summon the resolve "to seek, to find, and not to yield" to those who'd divert them from the wisest course.

### **Preparing our Campuses for Weightier Responsibilities**

In an October 1992 letter to Princeton alumni, President Harold T. Shapiro announces a "strategic planning effort" to rethink the priorities of what former Dean Aaron Lemonick portrays as "a great research university with a college at its heart." Shapiro assures his readers that "des-

pite the serious financial challenges facing all of American higher education, Princeton's budget is in balance, its programs are strong, and it continues to attract its students and faculty from among the very best candidates of each generation." So why the stock-taking? The President and his fellow administrators are keen to "identify areas where we need to do better," and they want everyone in the Princeton family to be "guided by a clear understanding of our long-term goals, aspirations, and commitments."

Among other things, Shapiro says he'd like to establish procedures for "the periodic review and assessment of the teaching and scholarly activity of individual departments." He considers it essential to know whether the university has "an appropriate balance among the physical sciences, the social sciences, the humanities, and engineering." He solicits advice on whether there are "fields where we should anticipate or encourage major expansion or change of status (such as the creative arts, or interdisciplinary endeavors of various kinds)," and he wonders if there are "fields not represented at Princeton that ought to be, and fields currently represented that ought to be scaled back or discontinued."

Shapiro affirms that Princeton should "increase the participation of minority students in all fields" of graduate education, and of "women in the sciences and engineering" in particular, and he requests alumni advice on how to accomplish those objectives. He thinks it likely that Princeton will "develop more formal mechanisms for preparing graduate students to teach." And he implies that the university should "assure that all students will have more opportunities in their first year to be taught in a small group setting by a member of the regular faculty."

As if in tandem with President Shapiro's call for comment on the health of his university, a professor of European literature laments in the November 11th *Princeton Alumni Weekly* that an institution long revered for its dedication to undergraduate education is no longer "a place of significant interaction between senior professors and younger students." Dante scholar Robert Hollander writes as a member of the class of 1955, and he says that "alumni who remember freshman precepts of six to eight students seated in the office of a senior member of the faculty recall a Princeton that is almost entirely gone." He observes that small-group instruction for underclass pupils is routinely handled now by graduate students, junior faculty, and even adjunct faculty, and he fears that an "apprentice teacher" on campus will conclude that "the younger students don't really matter." According to Hollander, this beginning instructor is likely to "infer that 'all my department cares about is publication; teaching at the introductory level is dog work.'" Hollander would find such a situation deplorable, and he says that "the university needs to send a clear message to junior faculty members that it highly prizes their serious involvement in the instruction (and advising) of younger students." To further such an objective, he urges Princeton to "increase the teaching load of every senior professor by one course per year" and pay them, "say, five thousand dollars each" for the additional classroom time. A plan of this sort "will work," Hollander insists, "only if all departments are committed to it and find their own ways of implementing it." And of course it will depend upon each professor's willingness to be "part of a common enterprise, with a shared belief and purpose."

If all goes well, this proposal or some acceptable modification of it will be adopted by Hollan-

der's colleagues, and the Princeton administration will come up with the funds to underwrite it. It would be a modest but widely marked gesture by an institution that is seldom criticized for the kind of attitude Hollander sees it as helping to inculcate, and it would dispatch a powerful signal to dozens of other research universities.

If nothing else, it would amount to an implicit admission that even our most plentifully endowed and highly respected campuses may not be doing all they can to focus appropriate resources on the instruction of first- and second-year students. It would demonstrate that colleges and universities that treasure high-quality teaching -- and the ethos a communal devotion to the learning experience promotes -- are able to devise and pay for ways of keeping it fresh and vital. And it would provide a salutary example of the collective action that can issue from a conscientious faculty member's responsibility to what he deems best both for the institution he serves and for the profession he represents.

Meanwhile it will be cheering if Princeton heeds President Shapiro's call for thorough self-examination and gives due consideration to all the topics on his agenda. The questions he poses are anything but idle, and many of them are the same ones other campuses around the country are reflecting upon as they ready themselves for a future whose demands may be quite distinct from what the past has equipped even our most successful institutions to do.

### **Restoring the Equilibrium Essential to a Higher Education Community**

The most common complaint about America's research universities -- that professors spend too much of their time on their own projects and delegate to inadequately trained graduate students the teaching that makes a real difference -- is so familiar that many of us have learned to tune it out. But the publicity the accusation is being given in *Impostors in the Temple* (New York: Simon & Schuster, 1992), Martin Anderson's broadside against the allegedly arrogant, aloof, and lazy "Intellectuals" who are "Destroying Our Universities and Cheating Our Students of Their Future," provides a potent reminder that the U.S. public is increasingly receptive to the perception that many of today's faculty are so self-absorbed as to be criminally negligent.

If only from the testimony of insiders like Derek Bok and Robert Hollander, not to mention the University of Chicago's Wayne C. Booth (who spoke very plainly to his fellow literary scholars during his tenure as President of the Modern Language Association of America), we know that there is truth to the charge that senior professors are disinclined to volunteer for introductory courses when they have the option of teaching advanced students in graduate or upper-division undergraduate classes instead. We know that, as the Association of Graduate Schools puts it in *Institutional Policies to Improve Doctoral Education* (Washington: Association of American Universities, 1990), "Graduate students often teach too much but are not sufficiently assisted in becoming effective teachers." And we also know that, particularly in subjects such as mathematics, engineering, and the sciences, the problem is compounded by the growing number of foreign nationals in our larger graduate programs; when instructors with halting English are assigned to teach America's young adults, the experience can be horrendous for everyone.



We know, in short, that there are difficulties, and that they derive in no small part from the way research universities administer their various instructional programs. At the same time, to be fair, we know that some of the most salient deficiencies in today's research universities are consequences of circumstances beyond their control. As Robert M. Rosenzweig and John C. Vaughn observe in *Heading Off a Ph.D. Shortage (Issues in Science and Technology, VII.2, 1991)*, federal support for graduate education is far lower at present than it was in the late '60s, and what funding there is now has to be spread among considerably more institutions than before. As a result, research universities are forced to maintain their graduate programs with less monetary aid to the students who enroll in them, and the students in turn are "caught in a financial vise: teaching is their only means of support, and their departments have economic and other incentives to make generous use of them as teachers."

That may sound like exploitation, and in some cases it arguably is. If so, however, it needs to be viewed in the context of what Rosenzweig and Vaughn have described as the problem of continuing to supply "a national resource" without a national investment commensurate with such an endeavor. In *The Ph.D. Shortage: The Federal Role* (Washington: A Policy Statement of the Association of American Universities, 1990), they point out that

Doctoral education produces the scientists, teachers, and scholars responsible for the discovery and dissemination of new knowledge, the preservation and interpretation of our intellectual and cultural heritage, and an understanding of the broader multicultural environment of which we are a part. Doctoral education therefore plays a critical role in the health of our citizens and the quality of their lives; it makes essential contributions to our international economic competitiveness and to our national security.

Since World War II, the federal government has looked to research universities as the nation's primary source of basic research and research training. Federal support for faculty investigators, graduate students, facilities, and instrumentation played a key role in the development of America's interdependent system of university research and graduate education, which is acknowledged worldwide for its quality and productivity and has come to play a critical role in America's unique research enterprise.

Several stresses will soon strike this university-based system of research and advanced education. Beginning in the mid-1990s, the imposition of increased undergraduate enrollments onto a strong, sustained faculty replacement demand will produce a substantial increase in the need for new faculty. This elevated faculty demand will combine with a growing demand for Ph.D.s in nonacademic markets to increase sharply the national need for doctorate recipients. It takes an average of seven years to earn a doctorate: the Ph.D.s that will be needed should be entering graduate school *now*.

But supply and demand are moving in different directions in doctoral education. The number of U.S. citizens receiving doctorates has declined for over a decade. Our capacity to reverse that decline is severely constrained by our inability to attract large numbers of non-Asian minorities and women into doctoral programs.

Rosenzweig and Vaughn remind us that

When U.S. preeminence in science and technology was challenged in 1957 by the launching of Sputnik, the federal government responded with sharply increased funding for graduate education and research. The response succeeded, increasing both the size and the quality of university research and graduate education programs.

Thirty years later, a renewed investment -- similar in kind, but smaller in magnitude -- is necessary. A recent report by the White House Science Council on the health of U.S. colleges and universities concluded that "our universities today simply cannot respond to society's expectation for them or discharge their national responsibilities in research and education without substantially increased support."

Rosenzweig and Vaughn emphasize that research and development (R&D) is "critical to industrial growth, national security, advances in health care, and the application of new knowledge in virtually every facet of our society," and that students trained in American doctoral programs are "the source of more than 50% of the nation's basic research." Much of this research takes place in university contexts, and a significant part of the specialized training a graduate student receives occurs in laboratories and other scientific settings. At the same time, however, we sometimes forget that roughly half of all Ph.D. recipients (and well over 50% in science and technology) make their contributions to America's R&D effort through employment in industry and other nonacademic sectors of the economy.

As we all know, "the competitiveness of the U.S. economy will be subjected to increasing pressure by other nations in the years ahead. Our strongest competitors in the Pacific Rim and Western Europe are expanding their investments in science and technology, recognizing the importance of these functions to economic productivity and other national objectives." And there is no reason to assume that they will alter such practices in the future.

Not unrelated to this situation is another arresting fact: the number of foreign students earning Ph.D.s from American universities has steadily increased since 1972, while the number of U.S. citizens earning doctorates has steadily declined. According to Rosenzweig and Vaughn, "The shift from U.S. to foreign students has been especially pronounced in science and engineering fields. In the physical sciences, the percentages of doctorates earned by U.S. citizens dropped from 79.3% in 1972 to 61.4% in 1987; in engineering, the drop was from 66.5% to 41.8%."

"That so many foreign students are enrolling in U.S. doctoral programs testifies to the quality of those programs," say Rosenzweig and Vaughn. "The infusion of talented students from other nations strengthens our doctoral programs and enriches this country's intellectual resources. But it is unwise national policy to rely so heavily on imported talent and fail to develop our own intellectual resources. The Korean government has begun systematically to recruit back to Korea its Ph.D.s educated here; other countries can be expected to institute similar policies as their demands for educated personnel intensify and their environments for research and scholarship improve."

In a useful summary of the history of American funding for doctoral education, Rosenzweig and Vaughn point out that

Large-scale federal support for graduate study was initiated with the passage of the National Defense Education Act (NDEA) in 1958. Over its 14-year life, NDEA Title IV supported nearly 46,000 graduate students. . . . Combined with support through research assistantships, the number of federally funded graduate student stipends increased from 1,600 in 1954 to approximately 80,000 in 1969.

The growth in federal support for academic research and graduate education was accompanied by rapid growth in the size of the enterprise: the number of doctorate recipients increased from just under 10,000 in 1960 to over 26,000 in 1969.

The period of growth in federal programs was followed by a precipitous decline. Between 1970 and 1975, federal funding for fellowships and traineeships dropped from \$430 million to \$201 million (in constant dollars). . . . Fellowship and traineeship support continued to decline into the 1980s. . . .

In FY 1989, the federal government spent a little over \$200 million to support approximately 12,000 new and continuing graduate students through fellowships and traineeships. Including an estimated 35,000 research assistantships, federally funded stipends total 47,000, a little more than half the peak number of 80,000 stipends funded in 1969. The correlation between eroding federal support and declining numbers of U.S. Ph.D.s is difficult to dismiss.

Rosenzweig and Vaughn do not argue for the level of funding the government put into graduate education in the aftermath of Sputnik. They concede that "The doctoral education enterprise grew too large too fast in the 1960s and early 1970s. Excessive growth produced a crowded job market, particularly in the humanities and social sciences, where the market was largely confined to the academic sector. In response, however, the federal government overreacted by dismantling wholesale the programs that had contributed to the surge in Ph.D. production."

What Rosenzweig and Vaughn propose to forestall future emergencies is a steady federal infusion, "an investment strategy that helps to reduce the impending shortages and evolves into a balanced, sustainable pattern of support."

If Rosenzweig and Vaughn are correct, the fiscal problems that induce many research universities to resort to less-than-ideal instructional practices are becoming more acute by the year, and will reach perilous proportions by the end of the decade. Many institutions, especially those in the public sector, are experiencing increases in undergraduate enrollments at the same time that they're suffering the faculty decreases occasioned by retirements and budgetary cutbacks. To compound the difficulty, they're being warned that they should be producing a larger number of Ph.D.'s in many fields -- more often than not in obsolescent facilities, and with equipment and technology that desperately need to be upgraded or replaced -- and do so despite a contin-

uing decline in support for those students who can be persuaded to undergo the financial hardships and career postponement necessary for doctoral study. Meanwhile, and quite understandably, they're being excoriated for raising their tuition fees for freshmen and sophomores who are increasingly likely to be taught principally by graduate students and other part-time instructors.

It's no doubt true, as Congresswoman Schroeder reports, that "when it comes to college education, American families are paying more and getting less." But the statistics analyzed by Rosenzweig and Vaughn cast doubt on the proposition that a sizable increase in the teaching loads of senior professors is the quickest way to start making things better. A good deal of belt-tightening is already under way at America's research universities, and many of them will find it advisable to ponder heavier teaching loads for their high-ranking faculty in the even more stringent era to be expected in the mid to late '90s. But in the meantime a nation that depends upon these institutions to a much greater degree than it often recognizes should reciprocate by asking whether its own commitment to an indispensable enterprise is sufficient to keep an acceptable level of doctoral study viable. If research universities are pivotal to the R&D engines that prime an ever more complex economic pump, and if they are also the major suppliers of the personnel we'll need to staff the schools, colleges, and other training facilities who'll educate the workforce essential to that economy, can we really afford *not* to come up with whatever funds are required to retain world-class standing for our key institutions of higher learning?

Let's now return to one of the issues that prompted this discussion. What, under optimal conditions, is the best way to meet the instructional needs of a research university? Should full-time faculty do all the teaching, or is there also a role in the classroom for graduate students who are learning the trade?

The Association of American Universities strongly recommends against the employment of graduate students as a means of discharging the fundamental teaching obligations of an institution of higher learning. In the view of the A.A.U., graduate students should be introduced to the academic profession, and its history, culture, and philosophy, as part of a well-rounded degree program. Under the tutelage of one or more faculty mentors, they should "receive instruction in teaching methods, with assessments and feedback on teaching performance, and if possible with a progression of increasingly advanced teaching experiences" (*Institutional Policies to Improve Doctoral Education*, 1990).

They should not be asked or encouraged to teach too much or too long, however (three years at most), because "excessive teaching is a major contributor" to excessive "time-to-degree." Under no circumstances should universities create courses or course sections for which "the principal justification is to provide financial support for graduate students"; instead they should find "other sources of support" that will permit graduate students "to expand their research skills" and complete their degree requirements in a timely manner.

In short, all graduate students "should do some teaching," just as they should do some directed research under the supervision of an established scholar. But both experiences should be included

in their programs solely for pedagogical reasons. Neither experience should contribute to "prolonging their apprenticeships as graduate students."

According to Robert Rosenzweig and John Vaughn (*Heading Off a Ph.D. Shortage*), "the median time required to complete" a Ph.D. "increased from 5.3 years in 1968 to 6.9 years in 1988." One consequence was an increase in attrition. "Comprehensive data are not available," they say, "but most estimates place it at about 50 percent, and it may be as high as 80 percent in some fields of the humanities." Both phenomena can be attributed in part to excessive teaching by graduate students. And both can also be related to the difficulties American graduate programs have encountered in their attempts to persuade talented women and minorities to pursue doctoral studies. Owing to these factors too, then, it makes sense to reduce the amount of teaching doctoral candidates are compelled to do in our large research universities.

Until more funds become available for U.S. graduate programs there will probably continue to be compromises -- if not abuses -- of the sort that have led to the recent investigation of higher education by the House Select Committee on Children, Youth, and Families. But that should not prevent research universities from making good-faith efforts to correct as many imbalances as they can. At the very least they can do more to ensure that *all* their courses, not just the ones designed for advanced undergraduates and graduate students, are taught as engagingly and rigorously as possible. And if financial exigencies force them to staff a number of their introductory classes with junior faculty and graduate students (ideally, pedagogically prepared ones), they can surely find creative ways of involving their senior faculty in the planning and teaching of those courses. To succeed in full measure, every "great research university" must have a properly incorporated "college at its heart." And the only way to assure that, in the words of *Integrity in the College Curriculum* (Washington: Association of American Colleges, 1985), is to insist upon "the responsibility of the faculty as a whole for the curriculum as a whole."

We've spoken earlier about the desirability of a graceful balance between research and teaching. How to achieve it is a perennial dilemma, and it used to be one that was largely confined to research universities. Now, fortunately, any discussion of the matter is complicated by what William G. Bowen of the Andrew W. Mellon Foundation once defined as a "good problem," in this case the fact that the academy is blessed with gifted, energetic, and productive scholars in every category of institution, including the two-year colleges who accommodate nearly forty percent of the students currently enrolled in higher education. We hear a lot about how few classroom-contact hours full professors have in the nation's large research universities; we probably hear too little about how many contact hours are normal for those who sweat in the vineyards of our community colleges. Like their counterparts in the nation's elementary and secondary schools, many of these teachers could be more helpful to their students if they had more time to cultivate their scholarly interests and keep up with the latest developments in fields that are evolving with breathtaking rapidity. Like the Clerk in Chaucer's *Canterbury Tales*, these instructors "gladly teach"; but it is crucial, not only to what they teach but to how they teach, that they "also learn" and have incentives and regular occasions to keep learning. Happily, there are many community colleges that recognize the need to keep their faculty nurtured in their academic disciplines, and those who can do so make efforts to provide released time, fund trips to research libraries and



professional conferences, and sometimes even support refresher courses at nearby colleges and universities. By the same token, there are baccalaureate colleges and universities that encourage interchange with, and supply academic offerings specifically geared for, community college faculty. If for no more altruistic reason, many of them are beginning to realize that if they are going to be accepting students who wish to transfer from community colleges, it behooves them to do whatever they can to warrant that the courses those students request credit for have been taught by instructors who are well versed in their disciplines.

At this point in our deliberations it may be worth recalling another comment from *Integrity in the College Curriculum*: "The enemy of good teaching is not research," not individual scholarship and publication, "but rather the spirit that says that this is the only worthy or legitimate task for faculty members."

We all know how insidious that malign spirit is. We do our best to evade it, and we sometimes delude ourselves into the belief that we have exorcised it from our midst. But until we drive a stake through its heart, we can count on it to continue eluding our frail defenses and siphoning off our precious lifeblood.

Ernest Boyer has confronted the demon more boldly, perhaps, than anyone else. In *Scholarship Reconsidered: Priorities of the Professoriate* (Princeton, 1990), he proposes a new definition of *scholarship* that gives equal weight to "discovery," "integration," "application," and "teaching." He points out, quite rightly, that the prestige of America's leading research universities has had a distorting effect on many of the nation's other institutions. "Rather than defining their own roles and confidently shaping their own distinctive missions," campuses that might have earned acclaim by following scripts suited to their own circumstances have sought "to gain status" by imitating "research centers." As a consequence, Boyer says, "the tendency in recent years has been to impose a single model of scholarship on the entire higher education enterprise," and "all too often students" -- and faculty who care about students -- "have been the losers." As a partial corrective Boyer recommends that graduate schools "give priority to teaching" in their training of future Ph.D.s, and that they do more to counter what Kenneth Eble calls "the narrowness of vision, the disdain for education," that has come to characterize too many of those with degrees from research universities. He also urges "the nation's ranking universities to extend special status and salary incentives to those professors who devote most of their time to teaching and are particularly effective in the classroom. Such recognition will signify that the campus regards teaching excellence as a hallmark of professional success."

As a further antidote to an unsalubrious overemphasis on specialized research, Boyer recommends a more flexible and inclusive concept of professionalism that will produce faculty who answer to a "full range of academic and civic mandates." What America needs now -- indeed, what the *world* needs now -- is a generation of "scholars who not only skillfully explore the frontiers of knowledge, but also integrate ideas, connect thought to action, and inspire students" to go and do likewise. Since "real life" (to borrow another shrewd remark from *Integrity in the College Curriculum*) "is interdisciplinary," Boyer finds it heartening that "interdisciplinary and integrative studies, long on the edges of academic life, are moving toward the center, responding

both to new intellectual questions and to pressing human problems."

What Boyer would like to see is more focus, both individual and institutional, on the application of scholarly resources to, say, the problems peculiar to our large cities. "For years," he says, "there has been talk of building a network of 'urban grant' institutions, modeled after the land-grant tradition." Boyer and his colleagues at the Carnegie Foundation for the Advancement of Teaching "support such a movement and urge these institutions to apply their resources creatively to problems of the city -- to health care, education, municipal government, and the like. What we are suggesting is that many doctoral institutions have not just a national, but more important perhaps, a *regional* mission to fulfill, too, and that faculty should be rewarded for participating in these more local endeavors."

To facilitate additional college and university involvement with what Derek Bok refers to as the "problems that really concern the people of this country," Boyer seconds Yale philosophy professor Jaroslav Pelikan's recommendation that undergraduate programs revise their concept of the departmental major to make it a much more "broad-based field of study." He also proposes that graduate education become "more attentive to the scholarship of application," so that future scholars will be less disinclined "to reflect on the social consequences of their work" and more adept at presenting it, to quote Peter Stanley of the Ford Foundation, in ways that will make "enormously complicated issues and evidence understandable to serious lay readers."

If we follow Boyer's advice about "the scholarship of application," we'll begin to see that what has always received lip-service as the humblest member of a traditional triad is now the cornerstone upon which the future of higher education must be erected. Obviously we'll have no tomorrow if we cease to provide the advanced research that has made America's universities the benchmarks for the world. And we'll be cutting off our own posterity if our teaching fails to convey that legacy to the young men and women who enter our halls as students. But we'll be invoking our annihilation even faster if we fail to note that what our country calls us most urgently to be is a helping profession. If we really want to benefit ourselves, we'll do so by opening our arms in outreach to others. In Ted Sizer's language, we'll be "neighborly." We'll recognize that what promotes our own interest is indistinguishable from what best promotes the interests of those who look to us for assistance. In short, we'll see that service is the jewel that crowns all our contributions to scholarship. Properly regarded, it's the gem that magnifies research and teaching as adjoining facets of the same radiant spirit.