

## Colleges Must Reconstruct the Unity of Knowledge

By Vartan Gregorian

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Anyone who has spent time in a college classroom knows what students want from higher education. For most students, college is a time for self-discovery, for developing passionate interests, and for trying to weave them into a meaningful career. Studies bear this out: In 1999 the Mellman Group, a market-research consulting firm, surveyed college students younger than 31 years old and found that 80 percent said it is "very important" for them to find work that "will make a positive difference in people's lives."

But a major failure of our higher-education system is that it has largely come to serve as a job-readiness program. Instead of helping students learn and grow as individuals, find meaning in their lives, or understand their role in society, college has become a chaotic maze where students try to pick up something useful as they search for the exit: the degree needed to obtain decent employment. Today's students fulfill general-education requirements, take specialized courses in their majors, and fill out their schedule with some electives, but while college catalogs euphemistically describe this as a "curriculum," it is rarely more than a collection of courses, devoid of planning, context, and coherence.

In fact, mass higher education is heading toward what I call the Home Depot approach to education, where there is no differentiation between consumption and digestion, or between information and learning, and no guidance -- or even questioning — about what it means to be an educated and cultured person. Colleges are becoming academic superstores, vast collections of courses, stacked up like sinks and lumber for do-it-yourselfers to try to assemble on their own into a meaningful whole.

The fundamental problem underlying the disjointed curriculum is the fragmentation of knowledge itself. Higher education has atomized knowledge by dividing it into disciplines, subdisciplines, and sub-subdisciplines — breaking it up into smaller and smaller unconnected fragments of academic specialization, even as the world looks to colleges for help in integrating and synthesizing the exponential increases in information brought about by technological advances. The trend has serious ramifications. Understanding the nature of knowledge, its unity, its varieties, its limitations, and its uses and abuses is necessary for the success of our democracy.

After all, political empowerment and economic opportunity stem from the same root: the spread of knowledge. Thomas Jefferson fervently believed that a nation cannot be ignorant and free; I share this view as well as Jefferson's optimism that societies become more democratic as citizens become more knowledgeable and cultured. That is especially true now when so many questions are being raised about the ascendancy of mass society, technological anonymity, and the loss of a sense of place in a world that increasingly lacks human scale.

We must reform higher education to reconstruct the unity and value of knowledge.

While that may sound esoteric, especially to some outside the academy, it is really just shorthand for saying that the complexity of the world requires us to have a better understanding of the relationships and connections between all fields that intersect and overlap — economics and sociology, law and psychology, business and history, physics and medicine, anthropology and political science.

As a society, we tend to pay lip service to the complexity of problems and then continue to gamble on simplistic solutions, such as building prisons to solve the crime and drug problems. But as Bela H. Banathy, a systems theorist, writes: "A technical problem of transportation, such as the building of a freeway, becomes a land-use problem, linked with economic, environmental, conservation, ethical, and political issues. Can we really draw a boundary? When we ask to improve a situation, particularly if it is a public one, we find ourselves facing not a problem, but a cluster of problems ... and none of these problems can be tackled using linear or sequential methods."

Yet such systemic thinking has been slow to catch on, even though the pitfalls of specialization have long been acknowledged and discussed. One reason is that, although the process of both growth and fragmentation of knowledge has been under way since the 17th century, it has snowballed in the last century. The scope and the intensity of specialization are such that scholars and scientists have great difficulty in keeping up with the important yet overwhelming amount of scholarly literature related to their subspecialties, not to mention their general disciplines. The triumph of the "monograph" or "scientific investigation" over synthesis has fractured the commonwealth of learning and undermined our sense of commitment to general understanding and integration of knowledge.

Nowhere is this trend better reflected than in our evolving concept of literacy. According to the Oxford English Dictionary, "literacy" is the quality or state of being literate, or possessing education, especially the ability to read and write. Today, however, there is a profusion of required literacies; we have proponents of technological literacy, civic literacy, mathematical literacy, geographical literacy, scientific literacy, ethical literacy, artistic literacy, cultural literacy, analytical literacy, and so on. My favorite is "managerial literacy." That particular literacy includes 1,200 terms and concepts, according to the book *Managerial Literacy: What Today's Managers Must Know to Succeed* (Dow Jones-Irwin, 1990), by Gary Shaw and Jack Weber. We are told that if you are conversant with at least 80 percent of them you can confidently engage in "meaningful conversations with other experienced managers."

Yet the skills of synthesis and systemic thinking are not just luxuries, they are invaluable. Information — of all varieties, all levels of priority, and all without much context — is bombarding us from all directions all the time. The total amount of collected information doubles every two or three years.

Of course, the same information technologies that have been the driving force behind the explosion of information and its fragmentation also present us with profoundly integrative tools. Information scientists, our high-tech librarians, are making greater uses of artificial intelligence to automate information-management tasks, including "data mining," the practice of having a computer continuously monitor and filter information according to set parameters. Electronic communication

networks like the Internet2 project provide new tools and opportunities for scholars to make connections among disciplines and share resources.

But while technology allows us to access more information, faster and in a more usable form, we must keep in mind the author and media critic Neil Postman's caution: "The computer cannot provide an organizing moral framework. It cannot tell us what questions are worth asking."

Higher education must raise the important issues and guide students in synthesizing responses, if not answers. Failing to do so is a missed opportunity of staggering dimensions, for history shows that humanity has a craving for wholeness. And when people do not know how to question deeply, to separate fact from fiction, and to give coherence and meaning to life, they can feel a deeply unsettling emptiness in their lives. Sometimes that vacuum is filled by esoteric ideas, cults, and extremist programs — which are very appealing because they provide answers for absolutely everything. In the last century we have seen this hunger for wholeness manipulated by radical ideologies and militant theologies — Nazism, the Khmer Rouge, Al Qaeda. Often they practice hatred and intolerance while proclaiming superiority and exclusivity.

I do not underestimate the challenge of reunifying knowledge in higher education, especially in the context of the information revolution that we've been experiencing. In just four years, students are expected to be informed about such issues as our nation's history, democratic society, global economy, international relations, and computer technology, and, for many, to be prepared for graduate study in medicine, law, business, art, architecture, or technical schools.

In fact, students have much less time than four years. Because many high schools don't do their jobs, 53 percent of college students, including those who attend community colleges, require remedial courses. In addition, almost 60 percent of students attend two or more colleges, and many students have family or work responsibilities. In 1999 74 percent of full-time students worked while attending college, and nearly half of them worked at least 25 hours a week. Unfortunately, many of those student workers say that holding a job hurts their grades, as well as limits their choice of courses. By one estimate, college students typically spend less than half the time on their studies than the faculty expects.

Clearly we have to re-evaluate our entire system of education for what it is: an 18-year learning continuum that prepares citizens for a life of learning. We must rid it of unnecessary and wasteful duplication, and create coherence and integrity in our curricula.

In particular, higher-education reform must focus on a revival of the liberal arts. Yet, paradoxically, liberal education is in decline just when we need it the most. In 1970 more than half of the baccalaureate degrees awarded were in a liberal-arts discipline. By 1995 that proportion had shrunk to closer to 40 percent, while about 60 percent of the degrees were in preprofessional or technical fields. The largest number of B.A. degrees granted in the 1990s was in business.

But a liberal education is needed to integrate learning and provide balance — otherwise students will graduate into a world in which dependence on experts of every kind will be even more common than it is today. With that trend comes an

even greater temptation to abdicate judgment in favor of others' opinions. Unless we help our students acquire their own identity, they will end up at the mercy of experts — or worse, at the mercy of charlatans posing as experts. Without liberal arts to provide a context for technical training, young people cannot be expected to understand the general nature and structure of our society, the role of the university, or the importance of values. The university's lack of a meaningful liberal-arts curriculum understandably sends many anxious students into the safer harbors of study that lead directly to positions in the job market.

What should be done? First, we must help teach the teachers. Colleges must develop strategies to enable their faculty members, who are steeped in different disciplines, to have opportunities for multidisciplinary work as they continue their own lifelong learning. An example might be internal fellowships or sabbaticals like those I instituted at the University of Pennsylvania, which encourage professors to spend a semester or a year with colleagues in another discipline.

We must also help students gain knowledge of multiple disciplines and their interconnectedness. Team teaching is one obvious way to do that. The undergraduate science program at Princeton University — in particular, courses that present engineering as a liberal art, taught by David Billington and his colleagues in the department of civil and environmental engineering over the past 15 years — is one outstanding example of this approach. Within disciplines, of course, teaching should encourage students to draw knowledge together from many sources.

The renewal and transformation of the liberal arts, however, remain the key to providing students with a rich and wide-ranging body of knowledge that will equip them to be both problem solvers and communicators and to assess situations and make effective, balanced, and timely judgments — skills that are essential in a knowledge-based, globalizing world. Many novel approaches to revitalizing the liberal arts on campuses have been proposed, among them: learning by doing — including the use of community service, field study, internships, and research projects to integrate experience and application with academic work; and learning communities, which bring groups of students and faculty members together to work over a sustained period of time, using multiple approaches to explore and develop responses to a major topic or problem.

Another promising avenue is the Carnegie Corporation of New York's "Teachers for a New Era" program, which includes top-level collaboration between university faculty members in the arts and sciences with those in schools of education to ensure that prospective teachers are well grounded in specific disciplines and provided a liberal-arts education.

A reform agenda must also include the creation of a balance between specialists and generalists. It is clear that we cannot abandon specializations or subspecializations or sub-subspecializations. After all, the division of labor has greatly advanced the cause of civilization. But for greater understanding, we also need generalists, trained in the humanities, sciences, and social sciences, who can help create a common discourse, a common vocabulary among the various disciplines. Unfortunately generalists are not held in high regard on campus or in our society unless they are big names, or else because they became generalists after first earning credibility as specialists.

Since our society respects specialists and suspects generalists, perhaps the way to solve the shortage of generalists is by creating a new specialty in synthesis and systems. The concept was described by the noted philosopher and essayist José Ortega y Gasset (who was also, for more than a quarter of a century, a professor of metaphysics at Central University of Madrid). He said, "The need to create sound synthesis and systemization of knowledge ... will call out a kind of scientific genius which hitherto has existed only as an aberration: the genius of integration. Of necessity, this means specialization, as all creative effort does, but this time, the [person] will be specializing in the construction of the whole."

There are a number of ways that this idea could take concrete form — indeed, it has already been put into practice with gratifying results. At Brown University, for example, Carlos Fuentes has served as professor at large, team teaching within the department of Hispanic studies. Also while at Brown, Martha C. Nussbaum was a professor of philosophy, classics, and comparative literature. Now, at the University of Chicago, she is affiliated with the law school, the divinity school, and the departments of philosophy, classics, and political science. She thereby enriches the perspective on each subject that she brings to students with knowledge drawn from the others and offering an example of another approach: the joint appointment of faculty members to several departments.

In the 1950s and '60s, when I was at Stanford University, it provided a Western civilization curriculum taught by a team of specialists, each one contributing particular expertise to create a richer, more nuanced and complete picture of the subject matter. Today Stanford continues to offer interdisciplinary courses like "History, Literature, and the Arts," and "History, Science, and Medicine." Another avenue for promoting "the construction of the whole" are universitywide symposia focusing on major themes, delivered in the context of a scholarly framework — thus exposing both the university community and the community of scholars to broad, interrelated concepts, discussion, and analysis.

"Where is the wisdom we have lost in knowledge?" T.S. Eliot once asked. "Where is the knowledge we have lost in information?" Colleges and universities must, once more, play a critical role in rediscovering that knowledge and that wisdom. Otherwise, they will resemble what Eliot described in a commentary on Dante's *Inferno*, when he wrote to the effect that hell is a place where nothing connects with nothing.

As a people, we need to understand where we were, where we are, and where we are going. The challenge for higher education, then, is not the choice between pure research and practical application but, rather, the integration and synthesis of compartmentalized knowledge. On our campuses, we must create an intellectual climate that encourages faculty members and students to make connections among seemingly disparate disciplines, discoveries, events, and trends — and to build bridges among them that benefit the understanding of us all.