

COMMONWEALTH CLUB OF CALIFORNIA
President Robert C. Dynes
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**“Making the Grade in the Global Economy:
California’s Stake in Education”**

[REMARKS AS PREPARED FOR DELIVERY]
[NOT AN OFFICIAL TRANSCRIPT]

Good evening, and thank you for coming here tonight. I want to thank the Commonwealth Club not only for its invitation for me to speak here tonight, but for its truly distinguished service to the people of California in providing this forum for dialogue on so many important issues of the day.

For those of you who don’t know me, I’ll say a couple words about my background. I’m a physicist, born and educated in Canada, who then came to the United States for a research career at Bell Labs in New Jersey. I came to California – to UC San Diego – in 1990, when I realized that the locus of innovation in America was moving from the big industrial labs – Bell Labs, RCA, GE, IBM, Xerox, Exxon, Kodak, and so on – to the nation’s research universities, and I wanted to move with it. (I also found California a pretty nice place to live.)

I was professor of physics and served in a couple of administrative roles at UC San Diego, ended up becoming chancellor in 1996, and then became president of the UC system in October of 2003. My wife, Frances Hellman, is a physicist at Berkeley. She plays soccer, I’m a runner, and we’re both big fans of theater and baseball – though I’m going to avoid commenting on any of the current issues in baseball, as that can only get me in trouble.

I’d like to talk to you this evening about the role the University of California plays in California, about the link between universities and economic growth, and about what we need to be doing to keep California competitive in the global economy.

A lot of us originally came to California because it is the most innovative, creative, risk-taking, diverse society on the planet. To stay competitive, we must retain that climate. And much of it comes from our universities.

At the University of California, we operate ten campuses – including our newest campus at Merced, opening this fall – along with three national laboratories, five medical centers, a statewide Division of Agriculture and

Natural Resources, and a network of UC Extension offering continuing education to working adults. It's an institution with over 200,000 students, 160,000 employees, and an \$18 billion annual budget. Only a small piece of that comes from the state, as I'll come to later.

UC has a three-part mission, and we describe it as research, teaching, and service. Now, let me say what this actually means, and how it applies to all of you. I describe it this way:

- First, we create new knowledge – that's the research.
- Second, we create the next generation of creators, through our teaching of undergraduate and graduate students.
- And third, we take the creations out for public benefit – and that is an important part of the service component in a public research university in the 21st century.

We're not here to do the stereotypical Ivory Tower, navel-gazing, "curiosity-driven" research. That is not what a modern public research university like UC is all about. To me, it's really about what I call "R, D, and D" – research, development, and delivery to the broader world.

We're here to help solve problems facing our economy and our society, through all the facets of our mission and through all of the technologies, products, medical cures, and agricultural breakthroughs we help create.

I've spent a good deal of my first year-and-a-half in office traveling the length and breadth of California, visiting with Californians and seeing, firsthand, examples of the impact UC has on our state. And it's really astounding when you see it:

- Our faculty and students produce an average of three new inventions every single day, and we're the nation's leading university in generating new patents.
- Our agriculture programs work on a daily basis with California's farmers, the result being that California today produces half of the produce in the United States.
- UC runs the nation's largest health sciences training program, educating 60% of the medical students in California.
- We're working in some of California's most disadvantaged public schools, to bring hope to the students in those schools and to

help improve their academic achievement and chances of attending college.

- And, probably the greatest impact of all, our students – who are at the heart of everything we do – our students go on to be leaders, entrepreneurs, creators in every field that is important to California’s economy, health, and quality of life. We pay a great deal of attention to giving our students a high-quality, research-based education at a public-school price. We get students with incredible academic credentials, and they graduate at very impressive rates, well above the national average.

We are not only local, though, but also national and global. You may know that the top research universities in the United States form the Association of American Universities, and there are 62 member institutions, public and private. Nine of those institutions – nearly 15% – are in one state: California. Three are private institutions – Stanford, Caltech, and USC. The other six are campuses of the University of California. No other state comes close to that kind of representation by its public universities.

In addition, our faculty have demonstrated over and over their excellence by any measure of academic quality. Just a couple of weeks ago at the White House, eight scientists from across the country were awarded the National Medal of Science, and three were from UC. Last month, the National Academy of Engineering inducted 74 new members and 11 foreign associates – and ten of them were from UC. Three of our faculty won Nobel Prizes last year. And the Times Higher Education Supplement of London recently ranked UC Berkeley the #2 university in the world, and UCSF, UCSD, and UCLA were all in the top 26.

Carol Tomlinson-Keasey, the chancellor of our new campus in Merced, recently took a trip to India. She told me that when she was in Bangalore, she walked into companies and met people who handed her business cards saying, “Ph.D., University of California, 1982.” It is a huge thing there to be connected to the University of California. And when you think about it, it is amazing to consider the footprint UC has in a place as far away as India.

One other thing makes the University of California special, and that is the fact that it is part of a strong *system* of public higher education that includes CSU and the California Community Colleges.

This system was created by the 1960 Master Plan for Higher Education, which at the time was a unique invention for organizing public higher education. It gave distinct missions to each of the segments of higher education. And it gave each of the segments a distinct population to serve,

within a framework of access to college for every high school graduate seeking it. At UC, we are charged with taking the top one-eighth of the California graduating high school class; CSU takes the top one-third. At UC, we also have a mission as the state's doctoral degree-granting institution and as the state's official research arm.

The Master Plan also built in functions such as transfer between the community colleges and UC and CSU, and joint degrees between CSU and UC, to ensure there was flexibility within the segments' individual missions and maximum opportunity for students.

I believe this has been a tremendously effective framework, not only in providing universal access to higher education for Californians, but in fostering a rare level of quality at UC *and* in making efficient use of the state's resources by asking each segment to excel at a specific mission. It's a system that has been the envy of the world.

So, this all sounds great. But we Californians face some very real challenges today. And these are challenges that the University of California – and all those who understand the link between universities and the success of the broader society – need to be playing a role in addressing.

The challenge I am most concerned about is the challenge of keeping California competitive in the global economy. California, and America, clearly cannot continue in the 20th century manufacturing model of economic growth. We need the creation of new industries that will power a new wave of economic growth. And we need a workforce that is prepared to fill the jobs those industries will create in a knowledge-driven economy.

The competitive pressures from other countries are substantial. China has gotten a lot of the press recently, but the fact is that many nations around the globe are intensifying their investments in their scientific, technical, and educational infrastructure, because they know these are the keys to economic growth.

Here at home, though, there are some troubling signs. Let me cite a few figures that our provost, M.R.C. Greenwood, likes to cite when she talks about the competitive threat:

- The U.S. as a whole has fallen from third in the world in 1975 to 17th today in the proportion of 24-year-olds who earn a degree in the natural sciences or engineering.

- In national comparisons of 8th graders, California recently scored last in the country in sciences and 7th from the bottom in math performance.
- While California has more than 16% of the nation's high-tech jobs, it grants less than 9% of the nation's science and engineering baccalaureate degrees.
- And there are huge gaps in educational opportunity in our public schools, which provide the foundation for a higher education. In 2002-03, nearly 1,500 mathematics classes in California high schools were taught by teachers with no teaching credential, and that was the case in more than 800 science classes.

I believe the research, education, and service conducted by the University of California are critical to addressing the economic challenge illustrated by the facts I just cited. The link between education and economic growth is absolutely clear.

So, what have we been doing? There are a number of things.

First, as I alluded to earlier, we've been focused on preserving access for students to a high-quality college education, even in tough budget times. Access and quality are at the core of the University of California's mission.

To preserve access, we've tried to preserve affordability. The state's budget cuts in recent years have led to substantial fee increases, after a period of about seven years in which fees did not increase – and actually fell a little. Today, our fees are just over \$6,000 a year, which is roughly 30% of the cost of educating a student. That fee level is about \$1,000 below the average of similar public universities around the country, and it's clearly lower than the tuition at elite private universities.

Financing a college education is never easy. But we have worked diligently to increase financial aid as our fees have increased, to ensure that students of all financial means continue to have access to UC. And as it turns out, today our campuses are national leaders in the enrollment of low-income students. Several studies have looked at the nation's top research universities and ranked them by the proportion of Pell Grant recipients they enroll – and the campuses of UC are right at the top of the list.

In addition to our efforts to preserve quality, access, and affordability, we have undertaken targeted efforts to enhance our contributions to California's economic health. Over the last several years, we have increased our enrollments of engineering and computer science students by more than

50% to help meet state workforce needs. We have launched four California Institutes for Science and Innovation, which are interdisciplinary research centers focused on creating new discoveries in fields that may hold the key to the future of the California economy – fields like nanotechnology, biomedicine, information technology, and telecommunications.

Similarly, we have an Industry-University Cooperative Research Program that has engaged more than 350 companies in more than 600 research partnerships in core technology fields. These partnerships have involved more than 550 faculty and 1,300 UC students. Like the Institutes, these partnerships are bringing together the best minds from across California to focus on leading-edge research that has broad economic applications.

And finally, we have been working in the K-12 schools to help improve the academic preparation of students in our state's most disadvantaged schools. Our programs offer tutoring, mentoring, test preparation, curriculum development, and other services to low-income, first-generation college-going students, using the expertise a research institution like UC can bring to these problems. The future success of California's economy is dependent on the preparation of all students, from all backgrounds and all parts of California, to be active participants in a knowledge-based economy. These programs are helping to achieve that.

Despite all of this, there is a great deal more we need to be doing.

If we want our children to be prepared, if we want our economy to retain its position of global leadership, and if we want our public universities in California to remain the equivalent of the nation's most exclusive privates, we need an action agenda. And we're moving on one.

I have launched a long-range planning process, the first of its kind in recent memory at UC. This process is going to bring in people from many different constituencies to help determine what California is going to need from UC in 15, 20, 25 years, and what decisions we need to make today in order to get there. We're just starting this process, and we don't have firm conclusions yet, but we have some general directions that we know we need to be moving in. I'll mention just a few.

First, we need to preserve the academic quality of the institution. That means recruiting the best people and asking them to put on the best possible teaching and research programs. And that, in turn, means paying competitive compensation to our faculty and staff, which has been a real challenge amid the budget cuts of the last few years. We've got to begin turning that situation around, and we're making an effort starting this year.

Second, we need to expand support for graduate education. Many people think of “college” and think of undergraduates, but our graduate students play a fundamental role in working with our faculty on important research innovations and in becoming a highly trained, highly skilled workforce for California. Indeed, 85% of our undergraduates tell us they plan to attend graduate or professional school.

We’ve worked very hard in recent years to accommodate a huge increase in undergraduate demand due to an increase in California’s college-age population. It’s a 40% enrollment jump in 12 years. But in graduate education, we’ve fallen behind other states. About 17% of our total enrollment consists of graduate students, or 23% including the health sciences. But the big public universities we compare ourselves to are at an average of 34%, and the privates we compete with are averaging 59%.

We’re going to keep our commitment to enrolling all eligible undergraduate students. But to keep California’s economy competitive, we’re going to have to find ways of boosting our graduate numbers also. And that includes the health sciences, where our enrollments have not grown much over the last several decades. By 2015, for example, California is estimated to have a shortfall of 17,000 physicians, and we must begin to address that need.

Third, we need to expand our contributions to the training of high-quality math and science teachers in California. I mentioned the needs in this area earlier. Right now UC produces about 250 credentialed teachers a year in math and science, and we think we need to step that up if we’re to truly serve California’s needs. We’re working on some innovative solutions to this shortage of high-quality teachers, in partnership with other institutions, and you’ll be hearing more about these efforts in the near future.

Fourth, we need to preserve our commitments to access, affordability, and diversity – ensuring that we are fully accessible to students of all backgrounds and all walks of life, even as we comply with Proposition 209. Those academic preparation programs in the K-12 schools that I mentioned are key to these efforts. They are under a threat in the state budget right now, and we are working very hard in Sacramento to convey the importance of those programs and the need for that funding to continue.

Fifth and finally, we need to be thinking increasingly about our place – California’s place – in the world. UC has a tremendous Education Abroad Program for our students. This year more than 4,500 UC students will study at one of 150 institutions in 35 countries around the world. That is a substantial commitment to building international understanding.

But we're working right now on a much broader, and much more intensive, international strategy for the University of California. We have programs, partnerships, and graduates all over the world. We need to be more strategic about how these things all fit together, and we need to be engaged in a very direct way with the economic and research efforts being undertaken by other countries.

To do all these things, of course, we need support.

We are proud to be a public institution, and a state institution. We take our public commitments very seriously. At the same time, it's worth noting that our state-funded budget has fallen 15% over the last four years, while at the same time our student enrollments have increased 19%. To look at a longer period of time, in 1970 UC received about 7 cents of every state general fund dollar. Today, it's 3.5 cents.

Today, excluding the national labs we operate for the federal government, about 20% of UC's funding comes from the state. That is important funding, because it pays for our faculty salaries and for the core student instructional program. But it's only 20%. The rest comes from federal funds, student fees, hospital revenues, private resources, and revenues from some of our self-supporting operations.

We've just achieved a new "compact" with Governor Schwarzenegger that is going to stop the state budget cuts of the last few years and give us some modest increases so we can achieve some basic stability and begin to plan for the future. That is a very important advance.

But the long-term question of how a university like UC preserves its contributions to California, in the kind of state fiscal environment we've been in, is a very serious question. To do what we really need to be doing for California, we're going to need more private support. We're going to need to continue finding efficiencies in the way we operate – and we're doing that. As just one example, we're on track to achieving some significant savings through some streamlined purchasing procedures we've recently initiated.

But we're also going to need the support of people like you – people who are willing to call and write decision makers, and tell your neighbors and friends, that California's future is linked to the University of California in a fundamental way. I really believe we rise, or fall, together.

It's a pleasure and an honor to serve the people of California as president of the University of California, and it's a pleasure to have had this opportunity to be with you tonight. At this point, I'd be delighted to hear your questions and comments.