

From Multi- to Meta-University:

Organizational and Political Change at the University of California in the 20th Century and Beyond

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If the “University of California ever fails to keep up with the growth of the state, it will lose its greatness . . . relaxation or retrenchment for even one year could throw it so far out of adjustment that it might take a generation to recoup.”

Earl Warren, Former U.S. Supreme Court Justice, California Governor and UC Berkeley Graduate, 1967¹

It was in 1963 at a famous series of lectures at Harvard University that Clark Kerr, then President of the University of California, offered his observations on the American research university in the post-World War II era. A transformation was underway. Kerr provided a brief historical review to help place the conditions of the university in 1960 in context. The “idea of a university” professed by Cardinal Newman at the University of Dublin some one hundred years ago was, to be generous, nearly gone. Newman’s image of higher education was of “a village with its priests,” offered Kerr. The next keen observer, again following Kerr’s historical review, was of a “modern university” in the image offered by Abraham Flexner in the 1930s. Here was “a town – a one-industry town – with its intellectual oligarchy.” Flexner, like Robert Hutchins, thought that the greater interaction with society, in research and graduate and professional programs, was suitable for a new economic age. But they also saw an organic core to the university that should guard against the encroachment of “service programs” and unlimited expansion: too many so-called universities had become “secondary schools, vocational schools . . . ‘uplift agencies’, businesses,” engaging in “incredible absurdities.”

Kerr saw these dangers, but also a new institution in the midst of the Cold War era. His idea of the “multiversity” was a “city of infinite variety “There is less sense of community than in the village but also less sense of confinement. Within the limits of this expanding metropolis were various communities and sub-cultures – scholars, disciplines, moderate students, radical students administrators, aggressive intellectuals, scientists with oodles of federal money, humanists battling with their own, and the list goes on.

Kerr's observation came in the midst of a huge explosion in knowledge, accelerated specialization, and increased attention to the panacea of education as part of an elixir to solve social ills, as a national policy to generate new technologies and brainpower necessary to beat the communists. Contradictory roles for the university was one factor that Kerr easily absorbed in his image of the multiversity.

What will become of the university in the new century? This short essay is an attempt to quickly build on the image offered by Kerr and to offer the unoriginal thought that that the next stage in the university's historical development is even more abstract, more pervasive, and ultimately more influential. This essay then attempts a cursory tour of the future of one major institution, the University of California. How might this case example provide us with a glimpse into the future? For this paper I have offered a quick look at the rapid expansion of the University of California, general observations on the emergence of management structure, and an assessment of the possible scope of expansion and change in the new century.

From Multi to Meta

It seems rather simple to state that universities will progressively develop into more complex organizations. Barring a paradigm shift to a cyber electronic world of higher education training, universities will become more relevant to society – though perhaps changed in their mission, in their educational products and research endeavors. In this world, universities will expand beyond the confines of “the city.” Let us add a few additional elements that mark the new age:

- *Technology.* The pervasiveness of technology is one obvious, relatively new and redefining factor. At one level there is the potential of a tremendous impact on curriculum and degree programs. Who will quickly adopt on-line courses? The most rapid use of technology for teaching and degree and credential programs has, thus far in America, come out of the private sector. Instructional technologies have enabled new proprietary ventures to enter the market for higher education. For-profit companies will undoubtedly grow in the midst of a rapidly expanding demand for educational services. But universities, in particular, have huge market advantages that, for good and bad, will result in their expansion beyond the campus and into the homes of eager recipients at perhaps a similar rate of growth. Research universities with known “brand names” have already begun their own start-ups in this relatively new venture. And in many instances, individual campuses have sought collaborations with other “brand name” institutions.

At another level of analysis related to technology is the prospect of a significant impact on the other two major products of universities: research and public service. Technological innovation has changed the nature of research activity, to be sure; it also has aided in the

development of intellectual and research communities again outside of the confines of the campus.

- *Knowledge Production and Globalization.* The new speed of knowledge development, aided by technology and by the post-World War II investment in research universities, adds another factor in this expansion from the village to the ubiquitous university. The melding of basic and applied research in fields such as biotechnology, medicine, communications and engineering are the high profile disciplines undergoing rapid change. Less obvious but also ubiquitous are the influences on the World Wide Web and the Internet on social science and humanities fields. The result is not simply that academic fields have new modes of retrieving new information and perspectives. It has also resulted in broader networks of colleagues and, in return, less dependence on the community of scholars found at an individual campus. This process of globalization is having a profound impact on knowledge production. It also has changed, for good and bad, eroded the sense of community that once helped define the academic campus.
- *University-Industry Collaboration.* The growing relevance of university research and the development of new industry-university collaboration provides a reconfiguration of the American Land-Grant ideal. This growing relationship is certainly is not all new. But the surge in this activity, and the entirely new scale of funding and consortiums with multiple private investors – both large and small companies – adds to the complexity of the university. In part, the dramatic success of basic research in creating applied technologies, and essentially the blurring of applied and basic activities, has both pushed and attracted capitalists toward the academy – and vice versa.
- *Elevated Tools of National Economic Development.* Because of the growing relevance of higher education, both real and perceived, there is an entirely new value placed on universities as tools of economic development. The world of the 1960 in the United States when core gave his lecture was conditioned by the Cold War, by the prospect of federal intervention and growing financial dependence. Socio-economic mobility and research as a mechanism for economic development were part of the justification for expanding research universities. The shift has come toward these latter two values, and increasingly toward economic development. This leads to the final two observations.
- *Increased Government Interest and Control.* In the post-World war two period, many leaders of American higher education noted the increased regulation, funding and interest of

government (local, state and federal) in shaping institutional development. Expanding access and gaining greater cost controls compelled state governments, in particular, to seek reorganization of public higher education and regulate and legislate their operation. Federal influence came in the form of increased grant and loan programs for students, but even more importantly in the relatively new largess Washington provided to expand basic and applied research during the Cold War struggle.

The scope of government interest in shaping higher education in the United States, and throughout the world, has expanded considerably. Expanding access, controlling costs (or gaining “efficiencies” to use the lexicon of an earlier era), and promoting technology for the Cold War and now post-Cold War period, have increased in saliency. Higher education’s two main products – educated professional labor and research -- have become key components to nation-state efforts at economic development. The brute tool of higher education as a means to economic competitiveness creates a relatively new political context and interest in government to direct higher education, often with little regard for the ideals of an educated citizenry and the concepts of academic freedom. This pattern of government influence, begun in earnest in the immediate post-World War II era, will potentially have dramatic impacts on the new and old higher education institutions.

- *The Scale of Change.* Last but not least is the sheer scale of our contemporary higher education institutions – public, private and proprietary. Enrollment demand and proactive efforts to increase the role of postsecondary education has resulted in university campuses that include 30 to 50 thousand students. In American universities, a campus might also offer extension courses that enroll another 50 to 100 thousand students. In the 1930’s, a campus with more than 30,000 students was thought to be nearly unimaginable. Add to this the growth in auxiliary enterprises, student services, new research units, a huge growth in university medical programs and services, and you have an organizational structure and university community that is much more complicated, costly and diffuse than what existed thirty years ago.

The maturation of public universities into multi-campus systems, often with institutions with different missions and degree programs, often with multiple off-campus centers, also provides a contrast to the notion of the single campus conducting its business and reaching out on its own to a known constituency. The prospect of significant changes offered by instructional technologies provides the sense that the greatest period of change in how the business of higher education is conducted – for good and bad -- may just be around the corner. It also provides an indicator of how the scale of higher education in, say 2025, may make our present operations seem relatively small and quaint.

This remaining sections of this short essay attempt to briefly look at this last factor in this incomplete list of new-age influences: the impact and nature of institutional growth on the Univesrity of California -- past, present and including a risky look at a possible future.

A Quick Tour of UC in the 20th Century

Four major features in the historical development of the University of California distinguish it from other major public research universities in the United States. The first is the University's unusual status as a constitutionally designated public trust -- a designation shared by only five other major public universities in the United States. The second is the University of California's tradition of shared-governance: the concept that faculty should share in the responsibility for guiding the operation and management of the University, while preserving the authority of the University's governing board, the Regents, to ultimately set policy. The third is the institution's development as a research university within a pioneering tripartite system of higher education -- a system that provides broad access and that has allowed the state's land-grant university to focus on a distinct mission of teaching, research and public service. And the fourth is the transformation of UC into one of the nation's first multi-campus higher education institutions. This last distinction came as a direct result of increasing enrollment demand.

These organizational features, combined with a significant investment by taxpayers to expand enrollment and academic programs, have helped to create a university enterprise of international distinction and vital service to the people of California, and to the world.

The scale of institutional growth is perhaps best presented by simply providing a picture of the world one hundred years ago. Benjamin Ide Wheeler became the new president of the University of California in 1899, traveling from New York to the Berkeley hills, fresh from the heights of a prosperous Cornell University. Wheeler had deftly acquired substantial new powers from the University of California board of regents before accepting the presidency. Since the University's chartering in 1868, the regents had enjoyed micro-managing the affairs of what was an under-funded and struggling institution. As part of the terms of his accepting the presidency, Wheeler gained greater authority to manage, reorganize, and build the institution -- with the cooperation of faculty who, as he noted, "perform services in the regulation of internal details which in many institutions fall to the official mechanism."² But upon Wheeler's arrival in Berkeley, he surveyed a difficult situation.

There were advantages. In his first report to Governor Henry T. Gage, Wheeler cited a few of them. The Berkeley campus was "a sound, sturdy, dignified institution, strongly entrenched in the love of its alumni and in the pride of the State." A respectful beginning, to be sure. The campus also had the proximity of "a great city of world importance." But beyond this, the new president was less sanguine. Rapid enrollment increases and a failure by California

lawmakers to make significant increases in funding (then largely based on a minor provision in the tax code based on property taxes) created a bad brew. There was the prospect of a flood of students without any strategic method or financial ability to accommodate their numbers – *déjà vu* for contemporary policymakers.

In many other states at the turn of the century, a similar mixture was simply overwhelming public universities, leading to academic programs of distinctly undistinguished character. Student attrition was rampant. Still, Wheeler thought Berkeley's problems acute: "Its equipment and income have been steadily outgrown in its rapid development; its buildings are entirely unworthy of its standing and its work."³ Only three other states exceeded California in the number of high school graduates who went on to college, noted Wheeler: Massachusetts, Connecticut, and Maryland. No institution, argued Wheeler in 1900, was forced to educate so many students with so few resources: "the estimated income for the present year provides for the 2,300 students entrusted to our care an average of \$134 per student . . . the cheapest education *per capita* attempted by any university in the country of like, or approximately like, standing."⁴ He was appalled at the large classes and the heavy workload faced by faculty. "The situation here at present is, I sometimes think, pathetic, and sometimes ludicrous," Wheeler wrote to the governor in another communiqué. "The students have come down like an avalanche. We have no elasticity in our budget by which to provide for them. We are doing our best, but it is only by a miracle that the multitude can be fed with the seven loaves."⁵

From these beginnings, the University grew and prospered, perhaps unmatched by any other single institution of higher learning in its influence on society and its contribution to economic growth. A comparison of the size and scope of the University of California a hundred years ago with today offers a dramatic picture of change. The year after Wheeler came to California, the University had one general campus in Berkeley; the affiliated schools of medicine, dentistry, and pharmacy, along with Hastings College of Law and the Mark Hopkins Institute of Art, all in San Francisco; and the Lick Observatory at Mount Hamilton. Total enrollment stood at 2,906 students (353 more than when Wheeler arrived), with a mere 183 enrolled in graduate programs (a paltry 6 percent of the student body). Forty-two percent of all the students were women – this at a time in which many higher education institutions in the United States excluded women or had quotas to keep the number of women to a small fraction of the student population.

Table I. A UC Profile At Century's Beginning and End: 1900 and 2000*

	1900-01	2000-01
Enrollment (headcount)		
Undergraduates	2,058	140,500
Graduate Students	183	41,700
Total Enrollment	2,241	182,000

% of Women	42%	51%
% of Graduate Students	6%	23%
B.S. Degrees Conferred as % of all UG Degrees	40%**	33%
Professional as % of all Degrees Conferred	36%**	4%
Summer School Enrollment	433	42,000
University Extension Enrollment	--	435,000
Faculty/Staff (headcount)		
Ladder Ranked (tenure & tenure tracked)	152	8,830
Lecturers/Other	55	3,480
Faculty Sub-Totals	207	12,310
Student/Ladder Ranked Faculty Ratio	10.8	20.8
Staff/Management (est. for 1900)	152**	99,040
Staff /Faculty Ratio	0.7**	8.0
Budget		
Total UC Budget	\$422,000	\$9.6 Billion
% State of California	43%	26%
% Student Fees/Tuition	4%	11%
% Gifts, Grants and Contracts	13%	23%
Total Value of Endowments	\$3,785,000	\$6.3 Billion
UC Budget/Endowment Ratio	0.11	1.52
Assessed Value of Land/Buildings	\$3,767,000	\$15.2 Billion
UC Retirement Fund	0	\$44.2 Billion

- Sources include President's Biennial Report 1900 (UC Office of the President); William Carey Jones, *Illustrated History of the University of California* (San Francisco: Dukesmith, 1895); *The Centennial Record of the University of California*, 1968; *A Century of Discovery: University of California* (UC Office of the President, 2000); "Profile of the University of California" (UC Office of the President, 2000).

** Notes: Most professional degrees were at the undergraduate level in 1900; staffing estimate projected by using 1895 data.

Today, the University includes a nine campus system (and soon ten, with a new campus planned in Merced), research stations throughout California and in many foreign nations. And since World War II it has had managerial responsibility for three national laboratories. In total, the University now enrolls nearly 184,000 students (approximately 51 percent of whom are women), with a graduate student population of 42,000 (or 23 percent of the total enrollment). Other spectacular increases can be cited: from 207 faculty in 1900 to 42,800 today; from a state budget of \$183,000 in 1900 representing 44 percent of the University's operating expenditures to nearly \$2 billion from state coffers and equating to approximately 26 percent of its budget (excluding the three national laboratories managed by the University, Los Alamos, Lawrence-Livermore, and Lawrence-Berkeley).

The contrast between the total operating budgets (not accounting for inflation and gain excluding the national laboratories) offers a staggering picture: \$422,000 a hundred years ago compared to over \$9.6 billion today.⁶ Table 1 provides a glimpse into the magnitude of change undergone by the University of California.

A Brief Look at Management Changes at UC: 1900-2000

What facilitated this growth in enrollment and programs and, at the same time, maintained and even increased the overall quality and international reputation of the University of California? Fundamental to seeking an answer for this question is an understanding of California's successive waves of population growth and the emergence of a political culture that valued higher education.

In 1847, California had a population of merely 15,000. The Gold Rush brought a dramatic surge of immigration. California suddenly had over 100,000 people, many toiling in the foothills of the Sierras in their search for immediate wealth. Other economic and population booms would follow. By the turn-of-the-century, California had 1.5 million people making it the 15th largest state in the country. In the post-World War II era, California's robust economy and plentiful land brought a surge of immigration that combined with a high birth rate made it the fastest growing state in the Union. By 1964, California celebrated its new status as the largest state when it surpassed New York. Today, California has over 31 million people with an economy that, if it were a country, would rank among the top seven in the world. Thus far, every generation has seen the population of the state double.

Over time, California government has sought to both nurture and anticipate such growth, making large public investments in the state's infrastructure and public institutions, including higher education. This sense of optimism and the general support of an activist government in key periods of California's history created a "politics of growth."

Higher education became an important political concern by 1900. Expanding access and creating new types of postsecondary institutions, beyond the University of California, become a goal of a major reform movement in the first two-decades of the 20th century – the Progressive Era. University officials such as Benjamin Ide Wheeler, articulated the vision of a set of three public higher education segments to both encourage Californians to enroll in higher education, and to push rapidly expanding enrollment demand to other public institutions. Wheeler and the faculty at the University wished to pursue the ideal of the relatively new model of the American research university that should be selective in admissions, and focused on advanced education, professional degrees, research and public service. In large part based on the University's influence and centrality to California Progressives, California established the first network of public junior colleges (what are today the California Community Colleges with 106 campuses), and set the course for the development of a regional college system (what is today the 24 campus California State University system).⁷

As noted, the University of California's unusual status as a public trust in the state constitution adds one more important contextual note. This status, acquired in a larger state constitutional revision in 1879, gave substantial management authority to the University's governing body, the board of regents. While tied to the state of California for funding the core

operating expenses of the University, the board has enjoyed a level of autonomy in internal management decisions that stands in sharp contrast the rest of America's public colleges and universities. Normally, statutory provisions passed by state legislatures – who, under the federal constitution have authority over all education in their respective borders – have had direct influence in areas such as establishing new campuses, admissions, faculty salaries, and a great variety of fiscal and personnel matters. While not completely autonomous from lawmakers, the University has had the rare opportunity to shape its management structure and ultimately its future.⁸

With these factors briefly noted, one can point to two major managerial decisions that help illuminate the spectacular expansion of the University of California and its general quality. The first is the development of two general spheres of policy making in the University of California that are relatively unique in American higher education: a) the academic senate with its delegated responsibility for issues related to educational policy; and b) an administrative structure that has developed largely in the post-World War II era, and has focused on the operational and financial aspects of the University.⁹

The second is the forging of one of the nation's first multi-campus research university systems, which has had crucial implications for the University's internal organization. Responding to rapid growth enrollment, many states simply established new colleges and university campuses, often with their own governing boards. Though the decision came reluctantly on the part of the University of California's board and under extreme political pressure, in 1919 the University absorbed the Los Angeles State Normal School as a "southern campus." The result was not only the geographic expansion of the University's liberal arts and professional programs, but also the beginning of an often bitter debate over the appropriate organizational structure of the institution. As with the model of the public land-grant university found in Wisconsin and Michigan, the University of California had satellite operations in various parts of the state. Research stations and agricultural extension programs existed in numerous locations, notably Davis, Riverside, San Diego, and the Lick Observatory on Mount Hamilton, as well as professional schools, including the medical center and the California School of Fine Arts in San Francisco. These facilities and programs were viewed as an extension of the Berkeley campus.

The establishment of the southern branch campus, however, changed the dynamics of the University's internal organization. The faculty, students, alumni and the regents had, in fact, been opposed to creating a new campus of the University in Los Angeles lest it draw attention and funds from Berkeley. But the threat of the southland's civic boosters, including lawmakers, to establish a new, independent state university caused Berkeley officials to rationalize a major new experiment in American higher education. At first, the southern branch was to have a

status similar to the various research stations, with no significant internal administrative structure, and subject to the rules and regulations set by the Berkeley faculty and the University President some 500 miles away. The Los Angeles campus, much like that of UC Santa Barbara some thirty-five years later, was seen by many in the University community as an unwelcome addition that would need to be carefully regulated.

Fulfilling the need for greater higher educational opportunities among a burgeoning metropolitan population, and supported by a corresponding expansion of Los Angeles' political power, the southern branch was soon arguing for equal status with the Berkeley campus. The same tension and sense of rivalry that helped to create the Los Angeles campus now became a major concern in the internal management of the University. A slow process began in which the campus would increase its autonomy from Berkeley, but within the framework articulated by University president Robert Gordon Sproul (1930-1958) of "one-university": a university system, the first of its kind, governed by the Regents, centrally administered by the president, with shared processes in areas such as admissions and academic personnel, and with shared values including a commitment to serve the evolving research and public service needs of an expansive state. On the basis of Sproul's recommendation, in February, 1937 the Regents formally approved the "one university" model.

While there was little discussion at that time of the University expanding beyond its two campuses, the net result was a policy framework that provided a mechanism for the University to grow and keep pace with California's burgeoning population and economy. In 1944, another state teacher's college was absorbed into the University system, Santa Barbara; in the 1950s new campuses were established at the University's research stations at Davis and Riverside; in the 1960s, new campuses arose in San Diego, Irvine and Santa Cruz. And now a new campus is being planned in California's Central Valley.

Between 1958 and 1963, when Clark Kerr was president of the University of California, both the administrative structure and the organization of the academic senate were altered to give greater coherence to the University's multi-campus system. The goal was provide greater local authority, and to provide general equity in the distribution of state funds to the campuses. Included were three general reforms:

- *Budget Equity*

Because of the University's unusual status as a public trust, California state government has provided funding for I&R costs in a lump sum payment each year. In other states, legislators have more direct authority over how those monies are distributed and spent. The University of California, and specifically the Board of Regents and the President, have had the autonomy to distribute these monies as they see fit and with relatively few restrictions. Before the early

1960s, the central office of the multi-campus University system, the Office of the President, then distributed these funds on a year to year basis. While there was a relation to student enrollment at individual campuses, both Berkeley and UCLA tended to garner the vast majority of funds.

The development of new campuses required a systematic approach to the distribution of state funds. Kerr and the Regents agreed to a formula that would provide a steady flow of funds to new campuses, while also protecting the two major and established campuses, Berkeley and UCLA. The distribution of state funds generated by enrollment would be according to the level of instruction. Lower division instruction would generate the smallest amount of state funding; allocations were then higher for upper division instruction, and higher yet again for master's students. The highest allocation was for doctoral students. The rationale was that costs increased according to the type of instruction. Graduate training was not only the costliest in terms of the amount of time faculty needed to devote to teaching and mentoring students, but also because it related to the research activity of the University. Core funding support for research was thus directly tied to the instruction mission of the University.

Conceptually, this model provided a level playing field for all campuses of the University of California -- although there were a number of caveats created to provide for special needs of campuses. While the enrollment surge at new campuses helped subsidize the graduate and research programs at Berkeley and UCLA, each campus, because of their already high percentage of enrollment at the graduate level, had the potential to gain similar funding support. This model provided an incentive for the new campuses to develop graduate programs, and to mature into strong research universities.

- *Universitywide and Campus Administration*

Kerr and the Regents agreed to give more direct authority to the individual campuses -- including Berkeley, Los Angeles, San Francisco, and general campuses at Santa Barbara, Davis, Riverside, San Diego, and eventually the new campuses planned in Santa Cruz and Irvine. This included the transfer of responsibility and staff to the campuses in areas vital to their day-to-day operation. The staff in the Office of the President was reduced by 26% in less than a two-year period by the establishment of chancellorships at the other campuses of the University other than Berkeley and UCLA. Beginning in 1952, the position of chancellor was created at Berkeley and UCLA, reporting to the University president and the regents, and acting as the main administrator for each campus. Now each of the new campuses gained a chancellor with the same and new powers over administrative affairs.

Campus business officers, as well as the deans, now reported to the chancellor with access to budgetary information previously controlled by the president and Sproul's long-time

associate and Vice-President for Budget, Jim Corley. Chancellors, for example, could now approve research grants, contracts, and the transfer of funds. Campuses also gained control over graduate education, replacing the administrative structure of northern and southern deans reporting directly to the University President, and reflecting the structure of the Academic Senate established in the 1930s.

These organizational changes gave the presidency a greater ability to focus on major issues confronting the University, while also providing new mechanisms for developing collaborative working relationship with the campus administrators. Kerr filled the position of Vice President - Academic Affairs, vacant since 1948, to help expand the consultative process with both the campus administrations and the academic senate -- what would be an essential component for guiding the subsequent and massive expansion in enrollment and academic programs. Between 1960 and 1975, it was projected that the University would grow from 49,000 students to over 130,000. Kerr also established a council of chancellors to meet regularly with the President, both to garner input and to coordinate activities, and urged the reorganization of the academic senate.

- *A Divisional Model for the Academic Senate*

Kerr helped to initiate major changes in the senate's organization to assist in policy development and to reflect the shift of greater authority to the campuses. The northern and southern sectional division of the senate proved cumbersome as the University grew in size, and it also accentuated rivalries, not only between Berkeley and what was now called UCLA, but also between the hegemony of these two campuses and the emerging campuses in each section. Meetings were held either at Berkeley or UCLA, and membership on Universitywide and sectional committees was apportioned by the number of faculty. Faculty at the new campuses, for example Santa Barbara, were not even regarded as full-members of the academic senate, and hence could not participate in Senate committees such as BOARS, until 1955.

Further, while Universitywide committees existed to formulate Universitywide policies and positions, including an "academic council" established in 1950 to iron out differences, the northern and southern sections would at times become embroiled in major disagreements. The precursor to today's Academic Council was, as observed in a 1953 study on "Faculty Self-Government and Administrative Organization," the "capstone of the state-wide committee system," charged with arbitrating such disagreements, among other things.¹⁰ But the process of reaching consensus was often overly lengthy, delaying important decisions.

In 1964, the Northern and Southern Sections were disbanded, and divisions were created for each campus with their own network of committees. Reflecting the historical role of

the President as the head of the Academic Senate (essentially, a faculty member who is also an administrator), Sproul had chaired all meetings of the Northern and Southern section. The new divisional model provided for a chair for each campus chosen from the faculty, and clear autonomy from both the Universitywide and campus administration. "The presidency of the Senate," remarked Russell H. Fitzgibbon in his 1968 study of the Senate, "hence became more honorific than operative."¹¹ In addition, a new Universitywide Academic Assembly was established with proportional representation from each of the campus divisions, with the authority to pass changes in the Bylaws and Regulations of the Senate, and resolutions and memorials to the President.

In a 1961 discussion at the All-University Faculty Conference regarding these proposed changes, the fear of anarchy was seen as the major problem confronting the University of California as the campuses grew in size and autonomy. Perhaps to a greater extent than the President or the Regents, it was argued, the Universitywide Senate was to be the "means of preserving a common policy and uniform standards for the University."¹²

Contemplating the Past and Projecting a Future: 2000 - 2050

At century's end, one can look back on the path chosen by the University and see how things could have been very different. California has been an innovator in business, in social affairs, in government, and certainly in creating its internationally renowned higher education system. But this was not fate. The circumstances are peculiar. As noted, California's land-grant university has enjoyed an unusual ability to chart its own future. This has occurred in a state with a continuously growing population, and with an economy increasingly dependent on trained labor and research supplied by higher education. And within this context, California has nurtured a political culture and a level of affluence that, in turn, has invested substantial public funds in higher education.

These peculiarities aside, the story of the University of California could have been more typical. For one, the University could have succumbed to a more populist mold, attempting to be all things to all people. This scenario, played out in many other states, would have included lowering admission standards and taking on an even larger flood of students. The efforts of Wheeler, the regents and faculty to construct a high quality enterprise would have surely suffered. By taking on the burden of a larger market share of California students wanting a higher education, the development of California's public higher education system might have also been very different. At the extreme end of this conjecture, the University might have retarded the growth of the junior colleges. Essentially, the University was allowed to pursue the vision of a meritocratic-based elite public university only because of the development of a vibrant and multi-level public higher education system.

Another alternative path was the very real possibility of the establishment of a rival public university in Los Angeles. At a critical juncture, the University could have rejected the pleas of the state's southern constituents and avoided or seriously delayed the transition to a multi-campus system. And from this failure could have come other developments, including the specter of multiple entrepreneurial efforts to create new state-funded research institutions. There are many instances where political influences from Sacramento and local communities have led to poor decisions within the University. In this case, the geo-political pressures exerted from Los Angeles forced the University into an innovative organizational model – a model that would prove its salvation.

Each of these alternative paths (opening admissions to a much wider pool of high school graduates, and failing to become a multi-campus system) could have led to a more common pattern of higher education governance found in other states. The proliferation of largely independent four-year colleges and universities resulted in a significant effort by other states to reorganize their collection of higher education institutions. In the post-World War II era, many states attempted to impose coherence on their public higher education systems by creating centralized governing boards – what have been termed “superboards.” Forced marriages of often very different institutions became the norm as states struggled to manage the costs and programs of public colleges and universities.¹³

In California, the idea of placing all four-year institutions (including the state colleges and the University of California) under a reconstituted board of regents was first proposed in 1932.¹⁴ But this path was resisted, in large part because of the coherency of the tripartite structure that had emerged in the Progressive Era. University of California officials had other worries. Merging the state colleges and the University would have meant that a single board would govern essentially two rapidly growing institutions with different missions: one devoted, at that time, primarily to teacher training and liberal arts four-year degrees; the other focused on undergraduate education, advanced training, graduate education, research, and public service. The new board's vigilance in maintaining the distinct role of the University as the sole source of advanced graduate degrees and the primary purveyor of academic research would have waned, particularly in light of the growing interest of the state colleges to expand their mission. Perhaps most importantly, and reiterating a persistent theme, any such reorganization of the board of regents would require an amendment to the state constitution. The result would be an opportunity for University critics – and there have been many -- to curtail or eliminate the University of California's unusual level of autonomy.

Reorganization of California's public higher education system under a single board (including possibly the junior colleges) was one threat posed by lawmakers that resulted in the 1960 Master Plan for Higher Education. Another threat that led to the negotiation of this plan

was the proliferation of state college programs and campuses, and the expressed desire of many college presidents to develop graduate programs and a state-sanctioned role in research.

The importance of the 1960 master plan is not so much what it invented, but what it prevented: the very real possibility of a forced reorganization of California's burgeoning higher education system by lawmakers, and in its wake the possible redefinition of the University's mission and role. University faculty and officials had helped to conceptualize this system. The University then became a powerful conservative force against reorganization.

The Scope of Future Enrollment Growth

What challenges will the twenty-first century present to the University of California? The following is conjecture. One might assume, for the moment, that the organizational structure of a multi-campus system developed over the past one hundred years will be sustained, in some form, in the new millennium. There are market shifts on the horizon. Virtual universities (on-line programs with little need for the infrastructure of a major campus) are beginning to prove a significant source for meeting the expanding need and demand for a higher education – particularly in specific professional fields. Is this a “revolution” in higher education that will, as some have proclaimed, mean the end of the traditional university campus? Or will on-line courses simply be another additional method of providing education and training – more a complement to the existing and already diverse mix of institutions and services?

One thing is certain, higher education is a growth field, and for some a booming business. The value of advanced education beyond the high school has steadily grown over the last century. This trend will continue. Assume that the higher education world of tomorrow will include a diverse public and private mix – in other words, that the traditional university and college in its varying forms does not become obsolete; instead, it retains a role in this more diverse market as a provider of liberal arts education and graduate training. Add to this the significant projections of population increase in California, along with the continued expansion of high technology economic sectors, and you have the ingredients for huge enrollment growth demand in this state.

In addition, while the Internet and other communication technologies are becoming a tremendous tool for learning and research, one might argue that the value of human contact in education and mentoring will actually increase. At the undergraduate level, there is also the process of socialization for teenagers making the transition to adulthood and work. For many, the desire to transition from the high school and the home to a collegiate environment will remain strong. Research universities provide a unique and extremely valuable community of students and scholars that cannot be underestimated. The Internet and distant learning techniques provide another tool to complement this community, not to replace it.

Using this set of assumptions, the following three charts provide a longitudinal picture of the University of California, past and future. The first offers the historical record of the twentieth century's enrollment increases, the establishment of new general campuses (e.g., when liberal arts programs opened), and a glimpse of a possible future.

Chart 1. (See attachment for properly formatted chart)

The historical dips and valleys of enrollment are familiar enough. Both World War I and II led to declines in enrollment. The GI Bill and the return of veterans to California created a huge bulge in enrollment demand that the University valiantly met, followed by a return to normalcy and then an unremitting and exponential increase in enrollment. Two general observations: when Wheeler arrived in California, the University faced a perplexing task of increasing enrollment. Since then, the University has grown in total enrollment on a scale no one imagined in Wheeler's time. The University was, in fact, slow in creating new campuses, reluctantly absorbing Santa Barbara State College in 1944 to create the third general campus. As in the case of UCLA, establishing the Santa Barbara campus came after intense political pressure. From this episode emerged a more aggressive agenda to create new campuses.

The frenzy of new campus development largely planned in the late 1950s provided a new geographic distribution of the University of California's academic programs. The building programs of the 1950s and 1960s created an infrastructure capable of expanding enrollment without new campus construction in the 1970s and 1980s. This pattern was replicated in what is today the California State University system. Almost as quickly as it arose as a means to both expand enrollment and bolster regional economies, new campus construction ended with the completion of UC Irvine, UC Santa Cruz and CSU Bakersfield – all opened in the mid-1960s. A decided political shift by the late 1960s, fluctuations in California's economy, and tax revolts, all contributed to a general lack of state investment in public institutions and public works.

It is only recently that new campus construction is once again entering the thoughts and lexicon of Californians. A revitalized economy helps to explain this shift. But perhaps more important is the anticipation and reawakening to the phenomenon of a continued rise in enrollment demand. Existing campuses are nearing their total enrollment capacity. In anticipation of this potential mismatch of demand with capacity, in the late 1980s, President David Gardner initiated a planning process that asked each existing University of California campus to determine its enrollment capacity and building plans.

Forecasting the future is a murky undertaking. Planning assumptions can change rapidly. A trend worth noting: when comparing past projections and the historical record, projections, thus far, have tended to underestimate enrollment growth. Chart 1 provides what

could be a conservative projection of increasing enrollment demand and are my own invention – with the use of some official numbers up to 2015. It is based on an estimate of enrollment growth of initially 3 percent at the undergraduate level, and then shifting to a lower projection of 2.2 percent after 2010, and then to 1.2 percent beginning in 2016. These estimates reflect planning figures generated by the California State Department of Education and the University of California Office of the President. Such projections become more difficult in the years past 2015 when one must then guess the number of new school age children that might be the pipeline.¹⁵ A drop to 1.2 percent is closer to the historical average and so is used here – in essence, an attempt to moderate what is already an ominous projection. Also projected is a .9 percent increase at the graduate level over the next ten years, and then going up to 1 percent. This is an estimate partly based on University of California planning up to 2010. It also reflects a sense that graduate training will increase in importance in the coming decades.

There are a number of additional assumptions that bear mentioning. One, California will continue to grow in population at a pace similar to the post-World War II era. Two, the University of California will maintain a similar market share of enrollment demand, and will continue to meet its obligation to serve the top 12.5 percent of California high school graduates. Retaining this market share will also be critical for expanding access to disadvantaged groups, and, in the near term, Latino and African-American students. And three, and perhaps most importantly, is the assumption that state and other resources will adequately fund enrollment growth within the University.

Will other sources of education and training, such as for-profit virtual universities and new private colleges, reduce this projected market demand? Will California's one hundred and fifty-year trend of population growth continue through the next millennium? Such variables may prove these projections too high. Yet there is an equal if not greater chance that they underestimate total demand. The one percent growth rate in graduate education in the years past 2010, for instance, may be a very low projection in light of the overall shift toward an economy increasingly dependent on professionals and a highly educated workforce. Demand for a higher education will continue to expand at both the undergraduate and graduate levels, and the University of California provides a known and, thus far, affordable and highly desirable brand name. Even if there is a drop in California's astonishing rate of population growth, this suggests an increasing participation rate among the state's citizens, and continued out-of-state and international interest in attending a University of California campus – whether in physical presence at a campus or in some off-campus virtual mode.

The variables in any such projection are substantial. The intent of this discussion is to provide a general scope of the challenges that lie ahead. Recognizing some of the caveats for such an enrollment projection, Chart 1 also provides an optimistic estimate of 2013-15 when the

University will reach a mismatch between enrollment demand and enrollment capacity – and including official University projections of UC Merced growing at a difficult pace of 800 students a year.¹⁶ In coming to this estimate, an allowance has been made for the development of alternative methods for increasing capacity. For one, it can be assumed that a proportion of this demand will be absorbed in on-line courses where a student might not need to use the facilities of a campus for, say, a semester or more. A more likely scenario: instructional technologies will supplement on-campus teaching programs, and thus result in only a modest dent in increasing total enrollment capacity.

Also, the expansion of summer sessions will also increase capacity – although such an expansion of the University's teaching program into a "year-round operation" may also displace other important activities, including research, outreach, and conference programs operated in the summer. Other options are under consideration within the University, including increasing students enrollment in off-campus programs such as education abroad and off-campus centers; increasing the instructional day or week; improving time-to-degree rates (thereby moving students more quickly through their degree programs and providing room for additional students); and expanding the physical capacity of existing campuses.

For the purposes of more conjecture, perhaps 15 percent of all student enrollment (and not simply the additional number of students that will come to the University system) could be absorbed under these "alternative" modes. This is probably a generous estimate, equating to approximately 35,000 students in 2010 – a number that equals the combined current enrollment of UC San Diego and UC Santa Barbara. Even with such efficiencies and advents, the disparity between enrollment demand versus capacity, as noted, would first hit the University around 2013-14. By 2015, enrollment demand would be at 258,000 students and at capacity (with alternative modes accounted for) at 252,000 – a disparity of 6,000. If "alternative" modes of increasing capacity equated to only 10 percent of all enrollment, then the disjuncture would be much larger: a total of 19,000 students could not be accommodated. However, for this risky excursion into the future we will keep with the more optimistic 15 percent.

Again, based on these enrollment projections, over a twenty-five year period (2000 to 2025) the University would grow by a staggering 108,000 students, or approximately 4,300 a year. To say the least, this is a pace that would strain the operation and budget of any university system. Only during a brief period in the mid-1960s was there a higher rate of growth: nearly an additional 6,000 students a year over a seven year period enrolled at the University. In that era, three new campuses helped to take some 28 percent of this increase. By 2025, the disparity between enrollment demand and capacity would be 22,000 students. And even further out, the University of California would face a total enrollment demand of 387,000 students by

2050. If we assume that by then some 25 percent of all enrollment could be accommodated in alternative modes, the disparity would reach 85,000 students.

In the late 1980s, the University of California Office of the President estimated a need for three new campuses by the early portion of the twenty-first century – one in the 1990s, and another in the decade following, and yet another by 2020.¹⁷ Enrollment projections offered one reason for new campus development; another intent was to create a large enough infrastructure to avoid huge yearly increases in enrollment for a new campus. The recession of the early 1990s ended any such vision. Concerned with California's economic decline and significant constraints on state and local government to expand its revenue flow, a number of critics of higher education professed a need to limit the development of new campuses, particularly research university campuses. Limited state funds, the argument goes, should be focused on those institutions that will yield the greatest number of undergraduates and the least cost – primarily the community colleges. In this view, all undergraduate education is alike; campuses are factories for delivering essentially one product, and one should invest in the most prolific producer.

In light of the historic and dynamic contribution of the University of California to the economy, and continued and rising public demand for access, such an approach appears parochial – a bureaucratic and myopic vision of what colleges and university are for. It is a curious twist of fate that the twentieth century ended with such a limited sense of the horizon. And this has come in the midst of great affluence, major socio-economic challenges, and the growing value of a college education and university-based research.

Organizational Challenges Ahead

If the enrollment projections provided for the fifty-year period ahead are reasonably accurate, the University of California should be actively planning for at least two to three new campuses, beyond UC Merced. It takes tremendous political acumen and foresight to choose the appropriate site for a new campus; it then takes almost gargantuan organizational skills and time, and substantial resources, to develop a viable and high quality campus. To reiterate, a campus, whether new or old, only has limited capacity to grow each year – a process that requires hiring faculty, staff, and an infrastructure of support services and facilities. Add to this the relatively new adoption of environmental regulations and community concerns over local population increases, and you have another important constraint on expanding the enrollment of a campus.

Using the projected enrollment figures developed for this essay, one can create a model that estimates the number of faculty the University may require. Student to faculty ratios have long been the standard for generating state funds, and a simple ratio projection provides one

method to arrive at an estimate. Historical data provides a glimpse of how this ratio has changed over the past century.¹⁸ During the Progressive Era, the University grew in enrollment and in faculty, but the slow pace of new faculty hires drove the ratio up. The subsequent fluctuations, as Chart 2 outlines, relate to economic shifts (recessions and depression and the rate of state financial support) and surges in enrollment (wars and returning veterans). Perhaps most interesting is the evidence of stability in this ratio after the 1960 master plan. As noted previously, lawmakers and the higher education community developed agreements that fostered ordered enrollment and program growth – this in the midst of yet another wave of student enrollment demand throughout the tripartite higher education system.

Good economic times have tended to provide a resurrection of budget support. Bad economic performance and the subsequent loss of tax revenues have almost always led to increases in the student-to-faculty ratio. Recognizing that recessions do happen, and that this phenomenon is likely to be repeated, the projection shown in Chart 2 (based on the previous enrollment estimates), includes a simulation of two possible recessions. Also included is a projection that student-to-faculty ratios will likely move upward for two general reasons. One, the adoption of instructional technologies will enable faculty to increase their teaching workload at the margin (a big assumption). And two, the promise of such a change (both real and imagined) will result in pressure by state government to reduce, at the margin, its per student contribution to the University's budget.

Chart 2. (See attachment for properly formatted chart)

One probable scenario is that each time there is a recession, state funding per student will decline. Economic recovery follows, funding is restored, but not at the previous level on a per student (and, ultimately, per faculty) basis. Other sources could stabilize the funding base for faculty positions: for example, fees and tuition, endowment funds and patent income. But for this exercise, let us presume not.

The challenge of expanding access in the first half of the new century will include, according to this analysis, accommodating not only 183,000 additional undergraduates and nearly 26,000 graduate students, but also a net increase of over 8,000 faculty. Again, this is an attempt at a conservative projection. It assumes an increase in the student to ladder faculty (tenure and tenure tracked) ratio from approximately 21.4 today to 24.7 by 2050. Will faculty become primarily the purveyors of packaged Internet courses? This might imply that the University will need fewer faculty, fewer campuses, and less human interaction between scholars and students.

A version of this story has been included in the projections shown in Chart 3. Table II outlines these and other planning assumption used to paint this picture of the University's future. Under this scenario, faculty hires in the coming half-century would not keeping pace with the totals from 1950 to 2000. Again recognizing the numerous and substantial problems of making such an estimate, the purpose is simply to gauge the huge task that lies ahead. If student-to-faculty ratios were to remain stable, the needed increase of faculty would be 14,000 by 2050 – slightly less than the new faculty hires during the 1950 to 2000 era.

Chart 3. (See attachment for properly formatted chart)

Beyond these numbers are more and extremely important issues for the University. These include, but are not limited to, the racial and socio-economic mix of students, the role of instructional technologies in expanding access, and the changing nature of the professoriate.

For all the visions of a new world of “delivering” higher education more “efficiently,” one can also see a future that includes a healthy increase in traditional campuses. The building of active (versus virtual) new communities of scholars and students is, for many, an environment critical for a liberal education, and for promoting scholarly research. One must also recognize the historical relationship of University of California campuses with geographic regions and the politics of creating new campuses. Historically, those areas with a University of California campus have higher UC participation rates by local high school graduates than those without a UC campus. That correlation, it appears, will remain salient. But local communities want the University's physical presence not only to increase local college attendance, but also to reap substantial economic benefits, including the prospect of attracting high technology industries, creating high quality labor pools, and, not least, gaining a substantial employer.

Expanding the number of campuses within the University of California system, as well as the California State University system, is, it has been argued, an issue of equity. Particularly in growing population centers of the state, to be without a traditional university campus is a significant disadvantage. And indeed, the very concept of the tripartite system was to spread higher education access to all major population areas of the state. These types of regional economic and quality of life issues will undoubtedly continue to drive policymaking.

Table II. A Set of Planning Assumptions for UC

A.	Enrollment	Increase <u>2000 – 2010</u>	Increase <u>2010 – 2015</u>	Increase <u>2016-2050</u>
	Undergraduates	3.0%	2.2%	1.2%
	Graduate Students	0.9%	1.0%	1.0%

B. Alternative Enrollment Modes (On-line/Summer/Other)			
	<u>By 2010</u>	<u>By 2025</u>	<u>By 2050</u>
% of Total Est. Enrollment	15.0%	20%	25%
Total Alternative Enrollment	35,000	58,000	97,000
C. Faculty Ratios (headcount)			
	<u>By 2010</u>	<u>By 2025</u>	<u>By 2050</u>
Students/Ladder Ranked	21.4	22.2	24.7
Students/All-Faculty	14.9	15.3	16.4

Another Century

No state in the union has experienced California's rate of population growth and economic expansion. One might suppose that some Malthusian limit will arrive and, to paint a positive picture, result in both a relative stable population and a productive high tech economy. Yet the historical record suggests the largest expansion is yet to come. With it will come significant implications not only for higher education, but also for the state's over-congested infrastructure and already taxed natural and built environment.

If the patterns of the next fifty years are to hold true for the entire century, the University could grow from a system with nearly 180,000 to students, to a mega-university with more than 600,000.¹⁹ By the year 2100, let us say that the University could accommodate some 30 percent of all students in virtual and off-campus alternative modes. That would equate to 188,000 students – the total size of today's University. Beyond the new campus planned for Merced, the University of California would then need to plan for at least seven to eight additional campuses (assuming a general limit of 25,000 students for each new campus) in this new century. As noted, at least two of these are needed in the very near term. In the century just ended, seven campuses were established.

Such projections are easily discredited. Thinking about the projections over the next ten years is enough food for thought. Contemporary University officials and lawmakers, like Wheeler and his compatriots in his era, are busily scanning California's horizon and searching for possible answers. The University of California has had a remarkable level of ability to shape its future and, in turn, carve a unique and valuable role in society. The University entered the twentieth century having attained the status of a public trust and with an initial organizational structure that gave the faculty a significant role in university management. From this base, the University leaders undertook the daunting task of creating a multi-campus institution that is an internationally acclaimed model. Why has the University of California been so successful? One can point to good management decisions and the tremendous support of Californians and lawmakers. Yet another important factor is the timing of decisions and the early and pioneering development of a larger system of public higher education in California. The result: the

University struggled with the process of becoming a multi-campus institution for most of this past century, and well before anyone else.

Can the contemporary organization of the University of California be sustained in future years? Or will the changing nature of higher education, budget constraints, possible revolutions in governance and a multitude of other variables force a radical departure? The academic community should reflect on its history, and more actively discuss the current and projected world. Equally important, policymakers and Californians need to do the same, and think more analytically about the value of investing in long-term solutions. Californians might then return to the most positive aspects of their political heritage and, in some more aggressive form, embrace the future. This essay has provided a glimpse into two possible paths that confronted the University of California in the century past. What will be the tale of the new millennium?

¹ Quoted in "Warren Joins Others in Urging Greater Understanding of UC, Academic Freedom," *University Bulletin*, Vol. 15, No. 36, May 8, 1967.

² Biennial Report of the President of the University – 1898-1900 (Berkeley: The University Press, 1900), 7; Virtually every major administrative position -- a total of forty in 1909 -- were faculty with appointments in one or more academic departments, including the deans of the various colleges, a new dean of the graduate school, a dean of the lower division, a dean of academic faculties. Further, the Recorder of the Faculty (later called the Registrar) was a faculty member and reported to four different Academic Senate committees that set admissions standards, selected students, and accredited California's high schools and junior college programs.

³ *Ibid.*, 8.

⁴ *Ibid.*, 24.

⁵ Cited in Clark Kerr, "Remarks by President Kerr: Ninety-Second Charter Day Ceremonies," University of California, Berkeley, March 21, 1960, University of California Archives – Bancroft Library (henceforth UCA).

⁶ Sources: *The Centennial Record of the University of California* (Berkeley: University of California Printing Department, 1967); University of California Office of the President, *University of California Annual Financial Report 1997-98*; University of California Office of the President, *UC Means Business: The Economic Impact of the University of California*, 1995

⁷ See John Aubrey Douglass, *The California Idea and American Higher Education: 1850 to the 1960 Master Plan* (Palo Alto, CA: Stanford University Press, 2000), pp. 81-113.

⁸ *Ibid.*, pp. 46-80.

⁹ John Aubrey Douglass, "A Brief on the Historical Development of the UC Academic Senate and the Universitywide Administration," UC Universitywide Academic Senate, August 18 1997.

¹⁰ Report of the Study Committee No. 1., "The Two Structures: Faculty Self-Government and Administrative Organization," chaired by Ewald T. Grether, and presented at the Eighth All-University Faculty Conference, April/May, 1953.

¹¹ Russell H. Fitzgibbon, *The Academic Senate of the University of California* (Berkeley: Office of the President, University of California, 1968) 53.

¹² *Ibid.*

¹³ Hugh Graham, "Structure and Governance in American Higher Education: Historical and Comparative Analysis in State Policy," *Journal of Policy History* 1:1 (1989), 80-107.

¹⁴ The Carnegie Foundation for the Advancement of Teaching, *State Higher Education in California* (Sacramento: State Printing Office, 1932).

¹⁵ See University of California Regents, "Providing Access to the University of California – A Progress Report on Long-Range Enrollment Planning," Committee on Educational Policy, Item 303, February 10, 1999; Planning and Analysis, Office of the University of California

President, "Educating the Nest Generation of Californians in a Research University Context: University of California Graduate and Undergraduate Enrollment Planning Through 2010," February 1999.

¹⁶ This is based on the following estimate of enrollment capacity: Current Long-Range Development Plans (LRDP) provide for a total enrollment capacity of 187,500 (headcount) for all nine campuses of the university; it is estimated by the University of California's Office of the President that the LRDP plans for these campuses (and hence, not including UC Merced) could be increased to accommodate possibly 12,500 additional students by 2010; plans call for UC Merced (which is scheduled to open in 2004) to accommodate 5,000 students by that year. This provides an estimate of an enrollment capacity of 205,000 by 2010. Plans currently call for UC Merced to grow at a rate of 1,800 a year – an optimistic estimate of possible growth and resulting in Merced reaching its capacity in 2021-22 of 25,000 students. As noted, in making a rough calculation of capacity, I have added an assumption that 15 percent of all enrollment will come in alternative modes by 2010 and by 25 percent by 2025, thereby expanding capacity. See University of California Office of the President, "Options for Expanding Enrollment Capacity at the University of California, Report to the Legislature," March 1999.

¹⁷ For insight into this planning process, see David Pierpont Gardner, "A Life in Higher Education: Fifteenth President of the University of California, 1983-1992," an oral history conducted 1995 and 1996 by Ann Lage (Regional Oral History Office, Bancroft Library, University of California, Berkeley, 1997), 447-459; also John Aubrey Douglass, "Planning New UC Campuses in the 1960s: The Role of Universitywide Academic Senate Special Advisory Committees," Universitywide Academic Senate, Brief for the Task Force on UC Merced, December 1998.

¹⁸ Again recognizing the limits of such an analysis, it is important to note that information on student and faculty numbers has historically been kept in terms of what is called "headcount" -- actual people, versus the post 1957 advent of looking at Full Time Equivalent workload data (for instance, one student equals fifteen units taken in courses).

¹⁹ This estimate simply adds the projected growth rate between 2000-2050 and multiplies it by two to create a conservative projection. However, if one assumes that the growth rate between 2000-2050 (118%) will hold true for 2050-2100, the projected demand level would be over 800,000.