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THE LIBERAL ARTS AND THE UNIVERSITY*

Tracing the Origins and Structure Of Undergraduate Education In the US and at the University Of California

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ABSTRACT

As the University of California continues to face unprecedented challenges—from state disinvestment, to attempts by the legislature to wrest control of the university, to disruption brought on by new technology, to concerns, valid or otherwise, about the value of college—university leaders must return to fundamental questions about the purposes of higher education to guide us in our decision making. With this essay, I look back at how we arrived at contemporary understandings of undergraduate education in order to show that today's dominant debates—regarding the purpose of higher education, its benefit to society, its benefit to individuals, its role in the economy, how curricula and the university itself should be structured, who should pursue a university education, and who should fund it—have in fact been meaningfully shaping institutions of higher education for centuries. I hope to show, too, that the system of public higher education that developed in the United States—and, particularly, in California—is exceptional, and worth not only preserving, but also enhancing and strengthening, given its unique contributions to economic growth, innovation, socioeconomic mobility, civic engagement, and cultural vitality, both for the state and for the world.

Keywords: University of California, History of Undergraduate Education, California Higher Education Model

How does higher education—especially in the domain of undergraduate education, and especially in the context of a research university—benefit society? How does it benefit students? What should be taught in college? What should a university look like? Who should attend it? Who should fund it? Who should govern it?

As the University of California system continues to face unprecedented challenges—from state disinvestment, to attempts by the state government to wrest direct control of the university from the Regents (or from the appointed administrators of each constituent university that make up a complex and internally differentiated system), to disruption brought on by new technology and globalization, to concerns, valid or otherwise, about the fundamental value of college—we also continue to engage critical questions that have been at the forefront of debates about higher education for many years, and that even now constitute the framework for decision-making regarding the future of this great university.

In briefly addressing these questions here, I hope to show that the system of public higher education that developed in the United States—and, particularly, in California—is exceptional, and worth not only preserving, but also enhancing and strengthening, given its unique contributions to economic growth, innovation, socioeconomic mobility, civic engagement, and cultural vitality—not to mention intellectual and academic achievement and education—for the state and for the world. Among its elite peer group, the University of California, Berkeley, is unique in its commitment to access, in its openness, and, as articulated by Clark Kerr some fifty years ago, in its strong sense of moral and social as well as intellectual purpose. In prioritizing support for undergraduate education as one of the pillars of my administration at UC Berkeley, I am also taking my lead from Kerr, who believed that perhaps the single major shortcoming of Berkeley—the flagship university of the system and therefore the symbol of the large and elite research university more generally—was its full commitment to the education and nurturing of the undergraduate student body.

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Classical and Religious Education

Like much of western society, higher learning has its roots in the classical thought of ancient Greece. What we think of as formal education is largely based in the structured, systematic study of a body of knowledge as promoted by the great classical philosophers Socrates, Plato, and especially Aristotle. Those thinkers were concerned with fundamental questions about existence and human nature—What is being? What is truth? What is wisdom? What is virtue? What is good?—and their followers developed a method of studying those questions that took the form of seven essential topic areas, divided into two categories: The trivium, consisting of the verbal arts of logic, grammar, and rhetoric; and the quadrivium, consisting of the numerical arts of mathematics, geometry, music, and astronomy.

Beyond serving as a basis for metaphysical inquiry, these areas—the original “liberal” (meaning, “worthy of a free person”) arts—were the subjects considered essential for citizens in ancient Greece in order to take an active part in civic life. At the time, this meant participating in public debate on the issues of the day, defending oneself in court, serving on juries, and serving the state through military service.

These seven subject areas provided a basic structure for intellectual life in early medieval universities, which sprung up in the 11th through 13th centuries. The university itself began as a congregation of people—the word *universitas* means simply a number of persons united into one body—not a physical place. Initially, meetings of the *universitas* took place where space was available, and did not have dedicated facilities unless a funder, often the church, provided one.

From the medieval period through the enlightenment, Christianity was inseparable from western universities, including all of those established in America before the revolution. Members of the clergy taught classes, and students predominantly sought positions as ministers later in life. Religious study ruled much of student life: chapel was held each morning and evening, and education was inseparable from prayer and the study of scripture.

While a curricular focus on the classical liberal arts began in this era, it was also framed by an early tension between reconciling the thoughts of antiquity, especially ideas related to understanding the natural world and our place in it, and those of the church.

Theologians of most denominations posited that the world was composed of ideas in the mind of the divine, which man could only “know” in an imperfect, mortal sense. At the same time, knowledge and understanding of these ideas and their purposes could be deduced systematically through logical means. While students benefited from memorization and recitation of scripture, then, they came to greater understanding through analysis of the laws of nature, laws that were both divine and logical. This purpose of education was made explicit in universities’ missions; at its founding in 1636, for instance, Harvard’s original student handbook stated, “the main end of the student’s life and studies is to *know* God and Jesus Christ.”

Such logical analyses were an essential part of learning, but the other two components of education in early universities were the mastery of languages—Latin for instruction, Greek to read the New Testament, and Hebrew to read and translate the Psalms and the Old Testament—as well as formal scholastic debate about religion and the moral subject.

While retaining significant ties to the church, universities’ priorities began to shift during the enlightenment. Education came to be seen as a key to becoming a “gentleman”—a person who had inner virtue and outward manners; who understood honor, generosity, independence, and fidelity. Professions such as medicine and law could exist outside of college, so an education was sought after for personal, not professional, betterment. At the same time, education began to be seen as a requirement for the functioning of the polity and civil society, especially for a new nation.

Higher Education at the Dawn of the Republic

Immersed as they were in classical history and thought, the founders of the United States assumed that the survival of republics hinged on their citizens’ abilities to put the public good—*res publica*—above personal interests. At the dawn of the republic, universities developed a new institutional focus and altered curricula designed to forge citizens who would strengthen the burgeoning nation as engaged and responsible participants in a democracy.

During the American Revolution, all but one of the nine colonial colleges supported independence. Significantly, revolutionary fervor caused a spike of interest in history, governance, political theory, and law. While the proportion of graduates entering the ministry dropped from one third in the 1760s to one fifth in the 1790s, graduates who became lawyers jumped from 13 to 30 percent.¹ Latin writings detailing the fall of the Roman Republic and beginning of the Empire were increasingly taught; and classic works evaluating systems of government or focused on civic morality—such as Cicero’s orations, Caesar’s Commentaries, and

Tacitus' histories—took new precedence as well.² As Yale President Ezra Stiles noted in 1777, “it is scarcely possible to enslave a republic where the body of the people are civilians, well instructed in their laws, rights, and liberties.”³

Most political leaders at this time did not consider it possible to educate everyone, but many did see value in producing what Thomas Jefferson called the “natural aristocracy” of learning and talent not tied to social class. Envisioning universities as essential to turning America into a true meritocracy—and in backlash against class-conscious European society—Jefferson developed the first notion of university education as a means of achieving social mobility. In founding the University of Virginia in 1819, he created the first publicly supported college, dedicated to educating leaders in practical affairs and public service rather than for either the pulpit or the professions. It was the first nonsectarian university in the United States.

Scientific and Practical Education

After the Revolutionary War, as American society became more industrial, new practical and vocational interests also altered the curricular focus of universities. Navigation, engineering, and mechanics joined religious and moral training. The study of classical languages began to give way to modern languages such as French and German.

Since Newton, basic science had had a secure place in the American curriculum, with physics and astronomy held in particularly high regard. Developments in the industrial era, though—the railroad boom and an attendant need for civil engineers, for example, and the 1840 publication of Justus von Liebig's *Organic Chemistry in its Application to Agriculture and Physiology*, identifying the roles of nitrogen and minerals in plants and explaining the mechanism behind fertilizers—provided displays of scientific knowledge tangibly serving economic interests.

As recognition spread that universities could offer practical education benefitting the economy, some pre-revolutionary era colleges were accused of failing to be—in the words of Amherst College's 1827 charter—“sufficiently modern and comprehensive, to meet the exigencies of the age and the country.”⁴

Critiques like these led to a curriculum review at Yale after the college's trustees advocated dropping the study of “dead ideas and languages.” President Jeremiah Day responded by noting how the curriculum in fact had evolved to include such new areas as trigonometry, surveying, and mineralogy, but also that the purpose of college was “not to finish a preparation for business, but to impart that various and general knowledge which will improve, and elevate, and adorn any occupation.” Day's belief that college should “lay the foundation of a superior education” through “the discipline and furniture of the mind; expanding its powers and storing it with knowledge” served as a mandate for the liberal arts, and his so-called Yale Reports of 1828 lasted in influence through much of the nineteenth century, and in some respect to the present day, even when the specific curricular recommendations it contained were most disputed.⁵

The new conceptions of the university introduced in the early to mid 19th century were often added to existing ones. Indeed, the university as a means to produce skilled labor and expand human knowledge accepted the basic tenets of traditional liberal study, if in the context of some debate over what kind of knowledge might be useful, even granting the foundational need for a moral sensibility. This notion that colleges could both turn out more useful citizens and generate useful knowledge was the basic idea framing the development of a national system of public colleges, the land grant universities.

Justin Smith Morrill and the Land Grant Act

On July 2, 1862, President Lincoln signed the Land Grant Act, giving states 30,000 acres of federal land for each of their Congressional representatives and senators, to be used to establish an endowment supporting:

At least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes on the several pursuits and professions in life.”⁶

Authored by Vermont representative Justin Smith Morrill, the Land Grant Act was not groundbreaking in theory—land grants had been used to support higher education since the birth of the country, practical education was already a stated priority for many universities, and agricultural colleges were even then operating in Ohio, Michigan, and elsewhere. What broke new ground, however, was the scale of the new act, enabled by Morrill's political acumen and the specific formula he adopted. Choosing to weight grants by numbers of Congressmen (and thus state population), Morrill made the idea attractive to skeptical easterners, and requiring that proceeds be used only as endowment induced states to make a permanent commitment to their colleges.

In all, sixty-nine colleges were established or expanded through the act. In envisioning a comprehensive system of colleges for the industrial class—the “thousand willing and expecting to work their way through the world by the sweat of their brow”⁷—Morrill elevated the practical vocations of agriculture and mechanics to the same social standing as the liberal arts and sciences, while ensuring that any citizen, at least in theory, could have access to both.

The Founding of the University of California

The University of California was founded in 1868 as the land grant institution for the state. Inclusiveness set land grant institutions apart from their private cousins to the East, and like virtually all others, UC was coeducational almost from the start; it began admitting women by 1870, and enrolled enough women to make up 40% of the student body by 1894. Similarly, UC never had any formal policies restricting or barring enrollment of any racial or ethnic group.

The main debates of the time concerned not the makeup of the student body, though, so much as the focus of the curriculum. Built on land belonging to (and, initially, as a means of preserving) the Oakland-based College of California, some lawmakers first thought the school should focus only on the agricultural, mining and mechanical arts, but in the end decided to merge the liberal arts college with the newer idea of a practical university. In part this was because of the outsized role Henry Durant, the President of the College of California, played in the development of the new university, and in part because of the influence of an 1867 lecture from Durant’s former Yale colleague, Professor Benjamin Silliman Jr., extolling the virtues of what he called a comprehensive university. This hybrid vision was reinforced in 1872 when Daniel Coit Gilman joined the budding institution as president. Recruited from Yale’s scientific school, Gilman vowed to develop a modern university in California, based on Yale’s liberal curriculum, but wide in its scope and offerings, and adapted to the state’s “public and private schools, to its peculiar geographical position, to the requirements of its new society and its undeveloped resources.”⁸

Very soon after Gilman took the helm of UC, however, an agriculture professor mobilized the agricultural interests in California to condemn the university for neglecting the study of farming. He procured support from the state legislature, which conducted a formal investigation into the management of the nascent UC and its Board of Regents. While the university and its administration were exonerated, the ordeal disillusioned Gilman, who left soon after to become the first president of Johns Hopkins University, successfully launching the first major American research university on the model of the nineteenth century German university.

The battle between UC and political interests persisted well after Gilman’s departure. Public distrust of the university was fanned by an economic depression, and bills were introduced to alter the governance of UC in order to give elected officials greater control. But in a constitutional convention in 1878, the university achieved a resounding victory by obtaining autonomy from political management and being named a public trust, “entirely independent of all political and sectarian influence, and kept free therefrom in the appointment of its regents and in the administration of its affairs.”⁹ Although the regents were to be appointed by the Governor, with the approval of the legislature, the theory was that twelve-year terms would enable them to transcend political pressure.

Throughout this saga, the University of California continued its commitment to practical as well as general education, not just in engineering and agriculture, but also, from 1898 on, in commerce as well. As President Benjamin Ide Wheeler noted in an address to the Merchants Association in San Francisco in 1899:

The day has passed when the university existed to train men solely in a certain narrow list of vocations, either for lives of leisure as gentlemen’s sons, or to professions such as the ministry, the law, medicine, and teachers... The modern university has to do with all that concerns life and the interests of life.¹⁰

Research and Specialization

Henry Tappan, the first president of the University of Michigan, went beyond Wheeler in articulating not just a universal idea of the university, but one rooted in discovering new knowledge. He defined universities as:

Cyclopedias of education: where, in libraries, cabinets, apparatus, and professors, provision is made for studying every branch of knowledge in full, for carrying forward all scientific investigation; where study may be extended without limit; where the mind may be cultivated... in the lofty enthusiasm of growing knowledge and ripening scholarship.¹¹

At the turn of the 19th century and increasingly throughout the 20th, the vision of the comprehensive university based in research activity for the advancement of knowledge was seen as foundational for public as well as private universities, led in particular by Michigan, Johns Hopkins, Chicago, and Columbia University.

This development had significant impact on undergraduate education. As the research foci of the university expanded, the variety of classes and specialized areas of study increased greatly. The formation of academic societies and the hiring of specialist faculty led to a proliferation of fields of study: universities hired professors of Sanskrit, Arabic, and Chinese; they developed new fields in social science that evaluated concrete social issues including prison reform, poor relief, crime, and deviance. At the same time, the pillars of the traditional undergraduate education—curricular separation of individual colleges, fixed courses for the Bachelor's degree, required Latin and Greek, routines structured around recitation—began to be replaced by curricula based on individual academic disciplines and increased student choice.

The idea of a specialized focus in a major, especially organized by academic discipline, only developed slowly during the 19th century. While the University of Virginia allowed students some freedom in shaping their studies early on, the first use of the distinction “major” related to undergraduate degrees was at Johns Hopkins in 1877, and was an innovation directly connected to the university's commitment to research in the German model.

Not long afterwards, at Cornell and Harvard, new elective systems granted students the freedom to explore personalized courses of study. Traditionally, classes had been attached to class year and named for texts to be covered. President Charles Eliot of Harvard reorganized courses by department, number, and instructor, and opened them up to all qualified students regardless of their year, championing what in 1885 he called a “spontaneous diversity of choice.”¹²

In 1905, the University of California followed suit, dividing the curriculum into a lower and upper division. UC created a framework for liberal study in the first two years of education, and increased specialization in the latter two, introducing the major as the organizing principle for these years. Since then, the idea that undergraduate learning should include general education as well as specialization—typically in the form of the major—has been a distinguishing feature of American higher education.

At the turn of the century, while academic study remained central to the university, the collegiate experience began to be viewed more holistically, encompassing as it did valuable nonacademic components in addition to a classroom experience, acknowledging too the role of college in mediating youth and adulthood. Inspired in part by Teddy Roosevelt's call for a “strenuous life,” athletics, especially football, became important to cultivating the “whole man.” Fraternities and sororities grew and acquired chapter houses, which had the side effect of attracting alumni back to campuses after graduation. Residential housing, student newspapers, the YMCA, glee clubs, and many other activities rounded out the collegiate experience. UC Berkeley inaugurated the idea of the residential college in the establishment of Bowles Hall in 1927, although other colleges, most notably Yale and Harvard, developed complete systems of residential colleges as part of a new commitment to the student community soon thereafter. Universities' new focus on organizing these elements of the life of collegians underscored the emergent acceptance that the value of college was not limited to what was taught in classrooms by professors.

Organizing Mass Higher Education

During the first half of the 20th century, the influence and importance of universities expanded not just for the elite but also for the growing middle class. For the University of California, as for some other public universities, balancing excellence in instruction with a need to increase capacity and access soon changed the nature of the institution in fundamental ways.

In the early 20th century, the University of California expanded its remit to include supporting students even before entry to college, so that they could succeed once enrolled. UC began to set standards for college preparatory courses, and university faculty visited high schools and reviewed their curricula, defining courses of study that would prepare students for college and creating benchmarks for accreditation. Students from accredited schools taking approved courses could be admitted to the university with the recommendation of their principal. This system of accreditation of public and private high schools by UC remained from 1884 until 1964, when the university deferred to the Western Association of Colleges and Schools for the purposes of accreditation.

But accreditation was just one piece of the puzzle. In 1907, the California legislature passed the nation's first bill to establish junior colleges as extensions of public high schools. Both students and businesses benefitted from the local, low-cost schools, which provided training for a growing white collar labor force as well as the more advanced technical jobs in the blue collar sphere. This set the stage for what would become, after World War II, the multi-tier, functionally differentiated system of higher education institutions that was a cornerstone of the California Master Plan for Higher Education. Significantly, it also reflected continuing disagreement about whether to create undergraduate degrees that would be exclusively professional, how to use professional schools and degrees for undergraduates, and what the meaning, reach, and significance of the liberal arts should be for the general population.

The President's Commission on Higher Education stated in 1947 that "every American should be enabled and encouraged to carry his education, formal and informal, as far as his native capacities permit," and it was in this era that many Americans began to see the university as necessary for personal fulfillment, economic betterment, and social success. This promise of access to higher education as a universal right was made explicit in acts like the GI Bill of 1944, which made clear to returning veterans that college was the path to rejoining society and to solidifying a place in the ranks of the middle class.

The California Master Plan and Modern Higher Education

The California Master Plan for Higher Education of 1960 was spearheaded by then-UC President Clark Kerr but devised by a survey team appointed by the UC Regents and the State Board of Education during the administration of Governor Pat Brown. The plan formalized an interworking system of postsecondary education that gave specific roles to the already-existing University of California, to the descendants of California's normal colleges or teaching schools, and to the state's community colleges. It associated a general commitment to the liberal arts with the research work of the top tier of the university system, while accommodating and serving a rapidly increasing population in need of new skills and advanced training across a multitude of fields. Under the banner of the idea of meritocracy, it provided the basis for the public support of elite higher education—the foundation on which Berkeley could be the peer of Harvard and indeed any other world university, private or public.¹³

To Kerr, the university had become a "prime instrument of national purpose." He argued that the knowledge produced at universities had become the main fuel for the growth of a nation, its military might, economic competitiveness, artistic excellence, societal contentedness, and political stability. In his classic 1963 book, *The Uses of the University*, he wrote that, "What the railroads did for the second half of the last century and the automobile for the first half of this century may be done for the second half of this century by the knowledge industry."¹⁴

Though students accused him during the 1960s of championing the corporatization of the university, Kerr was describing a new reality about which he had great optimism but also abiding concerns. Although he believed that the university would lead the way to new economic possibilities, he was well aware that it risked becoming a knowledge "factory" whose neglect of students through large classes, the overuse of teaching assistants, and the selection of faculty members based on their research expertise alone could neglect and even alienate the undergraduate student body.

Much has been done over the subsequent fifty years across the University of California to address these concerns, from the establishment of the visionary college systems in San Diego and Santa Cruz to the investment of huge resources on all of the UC campuses in student support, advising, housing, career counsel and planning, and perhaps most importantly, teaching. A nationwide discussion on how to better engage undergraduate students at major research universities, prompted by the Carnegie Foundation's 1998 Boyer Report, led to the elevation of teaching in faculty advancement reviews and to the expansion of student involvement in faculty research. Technology has and continues to change the way students learn, interact, and experience a modern liberal arts education, offering real and virtual learning environments that alter how they engage with peers, faculty, staff, and the university resources at their disposal. Inquiry-based learning, interdisciplinary opportunities, collaborative problem solving; the notions of global citizenry, ethics, and personal responsibilities; new models for mentoring—all of these, and more, form the foundation of an undergraduate education that is holistic in nature and also caters to the individual interests and abilities of students who come from increasingly diverse socioeconomic and ethnic backgrounds.

Nurturing the Future of Undergraduate Education

What emerges in this brief historical sketch is that undergraduate education is constantly evolving, becoming increasingly complex and sophisticated in a manner that reflects the growth in knowledge about teaching and learning, the needs and desires of society, and the history of faculty investment in the fundamental purposes of the bachelor's degree. Even—especially—in our current era of state disinvestment from public higher education, the University of California, Berkeley, is at the forefront of efforts to redefine and rearticulate the centrality of undergraduate education and the liberal arts tradition not just for our teaching mission, but for the other domains in which we excel, namely research and public service. Indeed, we are becoming more committed than ever before to supporting the student experience in and outside of the classroom, as we seek to prepare students for the growing challenges of life in the twenty-first century.

At the same time, we can see that an undergraduate education at Berkeley remains tied to the foundational ideals and values of a liberal arts education articulated over the decades and even over the centuries. In launching an undergraduate initiative at the flagship Berkeley campus, we are seeking to ensure that we are a knowledge "community" rather than a "factory," that an undergraduate degree at Berkeley combines the best of what is available in liberal arts colleges with the resources of a great research university, offering courses that teach basic competencies while offering an almost unimaginable range of opportunities for specialization, exposure to research and professional fields, as well as chances to work with some of the best faculty in the world.

Echoing Yale President Day, we assume that one of our primary obligations is to cultivate intellectual curiosity, that is, not just to train our basic intellectual capacities to evaluate different ways of understanding and interpreting the world, but also to stimulate students to search relentlessly for new ways and approaches to acquire and advance knowledge. We teach undergraduates not just so that they learn, but also so that they learn how to learn, whether on their own or in formal study. Increasingly, this means learning data numeracy as well as cultural literacy, worldly understanding as well as civic values, new skills for a rapidly changing world along with traditional values, habits, and dispositions.

As we build a steadily proliferating architecture of academic offerings in our majors and specialized programs, we are working to maintain (and in some instances restore) a sense of common purpose in our undergraduate curriculum, as also the importance of the extracurricular dimensions of college life (re-instating, for example, the importance of the residential college experience). We also seek to balance the need to attain general knowledge with the need for students to have sufficient training for their lives after graduation, either in graduate or professional study or in high-level careers. We seek as well to balance courses and training in the foundational principles of discrete disciplines with a range of applications that have robust practical implications. It is not an easy task; faculty must build curricular paths, moving students from general to advanced and specialized knowledge, in ways that can accommodate both wildly uneven levels of high school or community college preparation and the increasing technical, scientific, and intellectual challenges of almost every field.

Today, students face difficult if also exciting prospects, not just in an economy where traditional jobs are shrinking and changing at a faster pace than ever before (students graduating today will have an average of six different kinds of jobs throughout their lives) but in a world that challenges our inherited values around social justice, environmental responsibility, and cultural entitlement. We confront these realities by embracing change and innovation while also holding on to some traditions and values that have been for years a critical feature of the unique accomplishment that our university system represents. We are committed to preparing our students to be able to reinvent themselves intellectually and professionally numerous times over the course of their lives.

We take enormous pride in the fact that the University of California system is made up of universities that combine undergraduate education, graduate training, research, and public service in ways that have made us the envy of the world. At Berkeley in particular, we can settle for no less than to ensure that our undergraduates remain the full beneficiaries of the best set of undergraduate experiences available anywhere, in the larger context of the leading public research university in the world. To sustain this in the current environment will require new support, new resources, and new resolve, but we are confident of a future that is even brighter than our past.

FOOTNOTES

- ¹ Roger L. Geiger, *The History of American Higher Education: Learning and Culture from the Founding to World War II* (Princeton University Press, 2014) p. 145.
- ² David Robson, *Educating Republicans: The College in the Era of the American Revolution, 1750-1800* (Greenwood Publishing Group, 1985) p. 166.
- ³ A letter from Ezra Stiles to Eliphalet Williams, Dec. 3, 1777.
- ⁴ From *The Substance of Two Reports to the Faculty of Amherst College to the Board of Trustees, with the doings of the Board Thereon* (Amherst, 1827).
- ⁵ From *Reports on the Course of Instruction in Yale College; by a Committee of the Corporation and the Academical Faculty* (New Haven, 1828)
- ⁶ First Morrill Act, 1862, *Donating Lands for Colleges of Agriculture and Mechanic Arts* <http://www.ans.iastate.edu/history/link/morrill1862.html>
- ⁷ Annual Report of the Missouri State Board of Agriculture, 1866.
- ⁸ Inaugural Address of UC President Daniel Coit Gilman, 1872.
- ⁹ University of California Bylaw 5. Composition and Powers of the Corporation, Section F.
- ¹⁰ See San Francisco Merchants' Association Review, Volume 4, Issues 37-48.
- ¹¹ Henry Tappan, *University Education* (GP Putnam, 1851).
- ¹² Report of the President of Harvard College and Reports of Departments, 1885.
- ¹³ See Nicholas Lemann, *The Big Test* (Farrar, Straus & Giroux, 1999), for a critical review of the idea of meritocracy in the context of the history of the University of California.
- ¹⁴ Clark Kerr, *The Uses of the University* (Harvard University Press, 1963) p. 66.