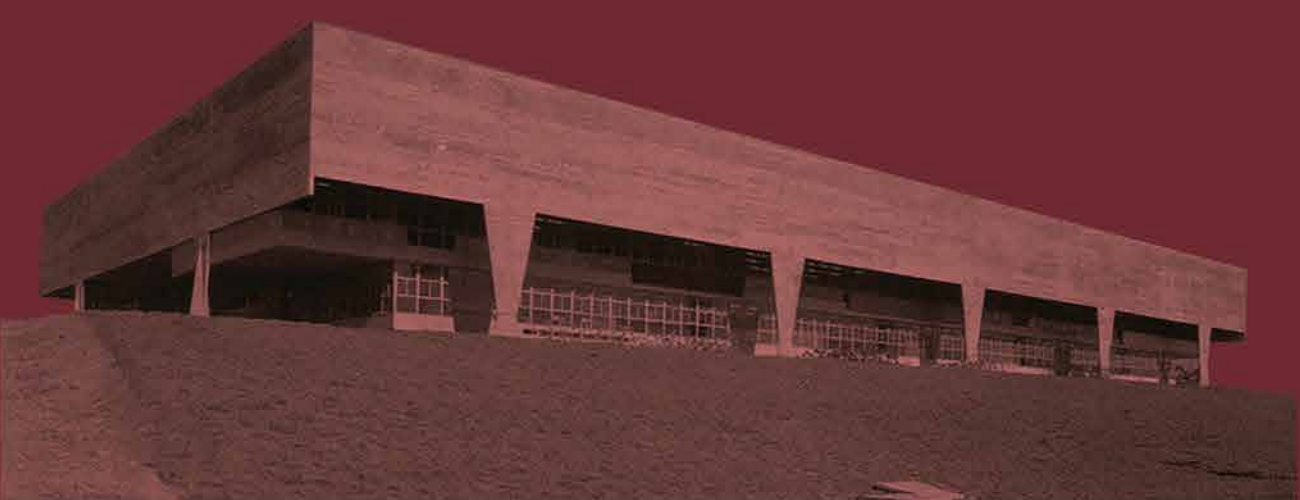
Construir para la enseñanza superior: las ciudades y templos del saber (1930-1990)

ACTAS PRELIMINARES

Pamplona, 16-17 abril 2026

Escuela Técnica Superior de Arquitectura - Universidad de Navarra



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Universidad Politécnica de Madrid

FROM THE ORIGINS TO THE POSTWAR BOOM: THE COLLEGE OF CHEMISTRY AND THE UC BERKELEY CAMPUS

Since its founding in 1868, scientific education has been a cornerstone of the University of California's academic mission. Chemistry courses began the following year, in 1869, and the College of Chemistry was formally established by the state legislature on March 12, 1872, making it one of the university's foundational academic units[1]. From then on, the College has awarded over 20,000 undergraduate and more than 8,000 graduate degrees, with more than 15,000 alumni living worldwide. It has produced eighteen Nobel laureates, helped discover sixteen elements, and contributed extensively to chemistry, chemical biology, and chemical and biomolecular engineering[2].

Completed in 1873, South Hall was the first building on the Berkeley campus—and the only original structure still standing from that period. It served the College for nearly two decades, with more than half of its space devoted to chemical laboratories. As the university grew, so did the College of Chemistry. In 1891, architect Clinton Day used over 43,000 bricks to design a striking Dutch-Gothic building featuring Tudor arches supported by columns topped with floral capitals, stepped gables, ogee roofs, decorative brick buttresses, corbels, cornices, and an impressive wooden cupola. This building, which later would be known as 'the Old Chemistry Building', symbolized the academic ambition of the College while providing state-of-the-art laboratory facilities for its time.

In the early decades of the twentieth century, the work of John Galen Howard, founder of UC Berkeley's School of Architecture (1903) and supervising architect of the university (1901–1922), endowed the campus with a monumental and enduring architectural character. Howard designed more than twenty buildings that established the formal vocabulary defining the campus, including landmarks such as the Sather Tower (1914; popularly known as "the Campanile" after its inspiration, St Mark's Campanile in Venice), the Hearst Greek Theatre (1903), and Doe Library (1917)[3]. Therefore, when the university persuaded Gilbert N. Lewis to leave Harvard to become dean of the College of Chemistry on the condition that a new laboratory would be built for him, Howard viewed the project as an oppor-

1. D'WYLDE, Marge, BERGMAN, Robert, & KING, C. Judson, *UC Berkeley College of Chemistry, Celebrating the First 150 Years*, UC Regents, 2023, p. 5.
2. Ibid., p. 2.
3. WOODBRIGE, Sally B., *John Galen Howard and the University of California: the design of a great public university campus*, University of California Press, 2003.

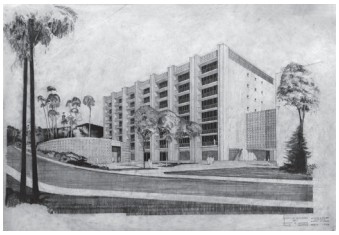

Fig 1. View of the College of Chemistry from the northern end of the chemistry campus, March 1958. Source: UC Berkeley College of Environmental Design Archives. Anshen & Allen Collection (2013-08), "College of Chemistry. University of California, Berkeley" (FF 70).

tunity to frame the College of Chemistry within a cohesive architectural landscape. Gilman Hall was completed in 1917 and became a centerpiece of Berkeley's Beaux-Arts campus[4].

The mid-twentieth century brought new challenges and opportunities. Lewis Hall, designed by Geoffrey Bangs[5] and completed in 1948, responded to growing postwar enrollments and the expansion of laboratory-based scientific research. The College itself had played a pivotal role during World War II, with faculty and alumni contributing to the Manhattan Project between 1941 and 1949. While the war highlighted the critical importance of chemistry, the postwar period catalyzed discussions about modernizing and expanding American university campuses to meet the educational needs of the baby boom generation. Across the University of California system, new general campuses were established —UC Santa Barbara in 1958, UC Davis and UC Riverside in 1959, UC San Diego in 1960, and UC San Francisco in 1964— reflecting the need to accommodate a rapidly growing student population, with projections placing Berkeley's enrollment at 27,500 by the mid-1960s[6].

These pressures resulted in several ambitious planning initiatives[7]. In the 1956 Long Range Development Plan, architect William W. Wurster, who would become the first dean of the College of Environmental Design in 1959, championed a vision that sought to balance high-rise construction with the preservation of open spaces by codifying a 25% coverage ratio, a figure that, in his own words, would "restore the campus to its old sculptural form"[8]. By 1962, a revised plan was prepared with the input of landscape architect Thomas Church, campus architect Louis A. DeMonte, and other university officials, linking the physical growth of the campus to the broader educational goals of the University of California. The College of Chemistry, with its historic buildings and strategic location on the northeastern edge of the campus, faced a critical juncture: the existing laboratories were insufficient for the increasing demands of teaching and research, and a major expansion was unavoidable.

COMMISSIONING ANSHEN & ALLEN: ARCHITECTS OF SCIENCE

The appointment of Anshen & Allen to design the new College of Chemistry complex at UC Berkeley was the culmination of a chain of professional relationships and fortunate encounters. Bob Anshen (1910–1964) and Steve Allen (1912–1992) met as architecture students at the University of Pennsylvania, where they developed a complementary partnership that would later define their professional practice together: Anshen was extroverted and skilled in public relations, while Allen, more reserved, possessed exceptional talent in drawing and design, refined through rigorous Beaux-Arts training. "Bob talks, and I draw"[9], Allen used to say.

Based in San Francisco since 1937, their first significant commission was the residence for Ralph K. Davies, vice president of the Standard Oil Company of California, in Woodside, California, which was completed in 1941. The success of this project led to further work for Davies, including hundreds of gas stations for Standard Oil. Among these, the Nob Hill Garage in downtown San Francisco, built in 1955, caught the attention of Don McLaughlin, Chair of the University of California Board of Regents and influential businessman.

4. D'WYLDE, Marge, BERGMAN, Robert, & KING, C. Judson, *UC Berkeley College of Chemistry, Celebrating the First 150 Years*, UC Regents, 2023, p. 47.
5. A graduate of University of California, Berkeley, Geoffrey Bangs earned his bachelor's degree in 1914 and obtained his master's the following year. His early career was spent working in the office of John Galen Howard.
6. *A Master Plan for Higher Education in California, 1960-1975*, California State Department of Education, 1960, p. 9.
7. HELFAND, Harvey, *University of California, Berkeley: An Architectural Tour and Photographs. The Campus Guide*, Princeton Architectural Press, New York, 2002, pp. 21-29.
8. WURSTER, William Wilson, "College of Environmental Design, University of California, Campus Planning, and Architectural Practice", typescript of an oral history conducted 1963 by Suzanne B. Riess, Regional Oral History Office, The Bancroft Library, University of California, Berkeley, 1964, p. 221.
9. PARKER, Derek, *Anshen + Allen: vignettes of an architectural practice*, no publisher, printed in 2022, p. 5.

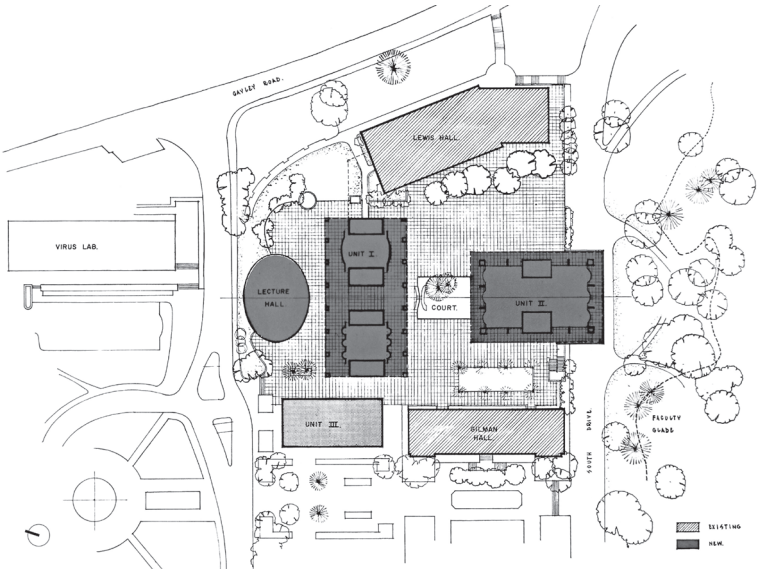

Fig 2. Master Plan of the College of Chemistry. In dark gray, the new buildings by Anshen & Allen: Lecture Hall (Pimentel Hall), Unit I (Latimer Hall) and Unit II (Hildebrand Hall). Source: UC Berkeley College of Environmental Design Archives. Anshen & Allen Collection (2013-08), "College of Chemistry. University of California, Berkeley: photos & graphics" (Box 8, Folder 110).

Impressed by the firm's ability to combine functional clarity with architectural innovation, McLaughlin recommended Anshen & Allen to Louis DeMonte, the campus architect for UC Berkeley, who was looking for someone to design the College of Chemistry[10].

By the time the commission arrived in 1958, the office of Anshen & Allen was staffed with several young architects struggling to manage the enormous amount of work that landed on the drawing tables of the founding partners. Derek Parker (1934–2023), born and educated in England, would join this talented group of junior architects two years later, in 1960. Despite his youth, Bob Anshen trusted him and made him his right-hand man in shaping the College of Chemistry expansion—a complex project involving the design of three new buildings. When Parker arrived at the firm, the first building was already under construction, and he was appointed to oversee its completion and lead the design of the rest of the complex.

Everything was moving very fast. Parker remembered having "completed the preliminary drawings in the back of Bob's [Anshen] Lincoln convertible on the way over to Berkeley"[11], a reflection of the frenetic pace of a commission whose scale and prestige he would always recall with a mixture of awe and determination: "It was a massive project, with six Nobel Laureates on the building committee"[12], he remembered. The involvement of so many distinguished scientists posed both a challenge and an opportunity, as the architects needed to balance functional requirements for complex research laboratories with the aesthetic cohesion of a newly envisioned chemistry campus.

The architectural shift then taking place at Berkeley also framed the project. Whereas the Beaux-Arts tradition of John Galen Howard emphasized monumental form and historicist expression, the postwar era under William Wurster's College of Environmental Design encouraged functionalism, modern materials,

10. Ibíd., p. 17.
11. Ibíd., p. 39.
12. Ibíd., p. 38.

Fig 3. Typical laboratory at Latimer Hall. Photo by Roger Sturtevant. Source: UC Berkeley College of Environmental Design Archives. Anshen & Allen Collection (2013-08), "College of Chemistry. University of California, Berkeley: photos & graphics" (Box 8, Folder 110).

and interdisciplinary planning. Anshen & Allen's design was expected to reflect these priorities and to synthesize technical sophistication with spatial clarity. The commission of the College of Chemistry thus represented a convergence of opportunity, talent, and visionary design thinking (Fig. 1).

THE CHEMISTRY COMPLEX: ARCHITECTURE FOR EXPERIMENTATION

The expansion of the College of Chemistry at UC Berkeley presented significant architectural and technical challenges. The chosen site, located on a steep slope near an active earthquake fault, required a solution that reconciled complex topography and seismic risk with the presence of historic campus buildings. Two of these structures, Gilman Hall (1917) and Lewis Hall (1948), had to be preserved and integrated into the new scheme.

Adding to the challenge, the entire project had to be executed in stages to keep the College and its research and teaching activities fully operational throughout construction. Anshen & Allen responded with a comprehensive master plan that divided the program into three distinct yet interconnected buildings, organized around a central plaza featuring open courtyards, landscaped terraces, and carefully choreographed circulation systems (Fig. 2). This phased strategy allowed laboratory operations to continue uninterrupted, preserving the use of existing facilities in Gilman and Lewis Halls while systematically replacing outdated structures[13].

The goal, therefore, was not merely to construct additional facilities, but to create a cohesive campus for the College of Chemistry within the broader fabric of the University. For this reason, although the proposal may have appeared bold and disruptive, the architects seized every opportunity to achieve an architectural harmony between the three new buildings and the two old ones:

> "We sought it in a plan arrangement of a cohesive group […] and in the duplicative use of materials such as the terracotta of the old tile roofs, here used as roof screens, and as veneers on the Physical Science Lecture [Pimentel] Hall, the terrace arcades of Unit I [Latimer Hall] and the terrace level library of Unit II [Hildebrand Hall]"[14].

Latimer Hall (Chemistry Unit I, 1960–1963)

The first building to be completed was Latimer Hall, constructed just north of Gilman and Lewis Halls. Named in honor of Wendell Mitchell Latimer, dean of the College of Chemistry during the 1940s, the ten-story reinforced-concrete structure—eight floors above ground and two below—accommodated both teaching and research. Three floors were dedicated to undergraduate laboratories, five to postgraduate and faculty research, and two basement levels housed mechanical shops and service facilities. The building was a colossus, with 831 laboratory stations and a lecture hall for 250.

Simple and functional in appearance, Latimer Hall derived its architectural expression from revealing both structure and function. The building itself became a demonstration of how to house chemistry laboratories, with a flexible infrastructure that could adapt to changing research and teaching requirements: all piping and utility services were exposed and accessible throughout, allowing laboratories to be reconfigured as needed (Fig. 3). A defining feature

13. They removed the Old Radiation Laboratory (Frederick G. Hesse, 1885; addition, Howard, 1911), a wood-frame building that began as the Mechanic Arts Laboratory (1885-1907), then became the Civil Engineering Testing Laboratory (1907-1931), until it was remodeled to house the thirty-seven-inch cyclotron and the pioneering research of Lawrence. Another Howard building razed was the Chemistry Annex (1915), a three-story wooden laboratory building that relied only on windows to ventilate its teaching labs of noxious gases and was fondly known as "The Rat House" by its graduate-student occupants. Removed from the site of Pimentel was the Crocker Radiation Laboratory (George W. Kelham, 1937), which housed Lawrence's sixty-inch cyclotron, and Howard's concrete Freshman Chemical Laboratory (1915). HELFAND, H., op. cit., pp. 90-91.
14. "College of Chemistry. University of California, Berkeley", Anshen & Allen Collection (2013-08), Box 4, Folder 18, Environmental Design Archives, University of California, Berkeley.

Fig 4. South façade of Latimer Hall, with the old brick Chemistry Building still standing. Photo by Roger Sturtevant. Source: UC Berkeley College of Environmental Design Archives. Anshen & Allen Collection (2013-08), "College of Chemistry. University of California, Berkeley: photos & graphics" (Box 8, Folder 110).

was its sixteen hollow concrete box columns, each eight feet square, positioned along the north and south façades. These columns carried laboratory exhaust directly to the roof, enabling open, loft-like interiors with flexible partitions. Because the shafts stood outside the main building line, the floor slabs extended between columns, forming balconies that provided emergency egress and access to the vent shafts. On the exterior, the vertical rhythm of columns and balconies made the building's structure and function unmistakably clear (Fig. 4). At roof level, the balconies gave way to terracotta grilles—screens designed to conceal rooftop mechanical equipment—while the columns terminated in sculptural capitals that paid homage to the old Chemistry Building, which would later be demolished during the construction of Hildebrand Hall.

Derek Parker recalled how Bob Anshen insisted on redesigning these capitals during construction. Dissatisfied with their initial squared-off form, Anshen asked the young architect to come to the office on a Sunday morning to sketch alternatives. Parker produced six designs, including a playful version featuring the heads of Anshen & Allen in a Mount Rushmore motif. The chosen solution was incorporated at minimal cost, illustrating the firm's combination of functional rigor and creative improvisation. As Parker summarized, "All it took was Bob's initiative, persuasion and commitment to continuous improvement, some Anshen & Allen money, and my participation on a Sunday in the office"[15].

Pimentel Hall (Physical Sciences Lecture Hall, 1962–1964)

The second building to be completed in the complex, Pimentel Hall, was designed to fully harness the sense of theatricality and the pedagogical value of live experimentation championed by renowned chemists such as Joel Hildebrand, who once remarked:

15. PARKER, D., op. cit., pp. 38-39.

> "A good lecturer must be something of a ham actor. He should perform experiments on the lecture table, not just demonstrations. I tried more and more as the years went by to stimulate students to interpret for themselves what they see on the lecture desk. The dramatist doesn't tell, in the prologue, how the last act is going to turn out"[16].

Dedicated to George C. Pimentel, inventor of the chemical laser, the building was conceived as an oval, two-story lecture hall purpose-built to enhance the teaching of experimental chemistry. The auditorium seated 550 students and featured a pioneering rotating demonstration stage divided into three sections. This ingenious setup allowed one experiment to be presented while two others were being prepared in adjacent rooms, effectively doubling the hall's instructional capacity. The facility was also equipped with closed-circuit television cameras, enabling close-up projection of demonstrations—an innovation that brought even microscopic reactions to every seat in the room. At basement level, a direct connection to Latimer Hall facilitated the efficient transfer of materials and apparatus between the two buildings.

The exterior was clad in pierced terracotta panels that echoed the parapet treatment of Latimer Hall, visually unifying the complex across the shared plaza. Inside, the hall reflected a rigorous concern for pedagogical efficiency, safety, and adaptability, enabling simultaneous teaching, demonstration, and laboratory preparation in a continuous workflow. As Kenneth Pitzer, dean of the College of Chemistry from 1951 to 1960 and professor from 1971 to 1984, noted, the "very clever rotating demonstration unit or stage" was essential to the building's success: "Without that it was not feasible to have lectures without gaps in between lectures for the preparations for demonstrations, and so on. So it was a real contribution"[17].

Hildebrand Hall (Chemistry Unit II, 1962–1966)

As the third and final component of the complex, Hildebrand Hall was described by Anshen & Allen as "an iceberg because a large part of it is hidden"[18]. Named after Joel Henry Hildebrand, long-time chemistry professor and former dean of the College, the building incorporated two subterranean levels to accommodate laboratories requiring strict control over temperature, humidity, and vibration. These lower levels also contained a central service and receiving area with underground freight passages, enabling the efficient distribution of materials to all buildings in the chemistry complex, both new and old. Atop the basement levels, an expansive plaza was designed to connect the entire chemistry campus, with sunken courts and stairways linking the underground facilities to the landscaped surface (Fig. 5).

Forming the southern anchor of the new plaza, Hildebrand Hall housed the College of Chemistry Library at the terrace level, a vital hub for academic activity. The two upper stories contained teaching laboratories, research areas for physical chemistry, and faculty offices. Because Hildebrand Hall replaced the old brick Chemistry Building, the original cupola was preserved from demolition and later installed in the Chemistry Plaza, serving as a symbolic link to the College's past.

Constructed of reinforced concrete footings, columns, walls, and slabs, the building featured post-tensioned slabs on the upper floors, cantilevered beyond their supports, tension rods supporting lower overhangs from a specially

16. D'WYLDE, M., BERGMAN, R., & KING, C. J., op. cit., p. 110.
17. Ibíd., p. 129.
18. "Projects", *Architectural Forum*, September 1963, p. 51.

Fig 5. The Chemistry Library in Hildebrand Hall, seen from one of the sunken courts connecting the basements with the plaza. Photo by Rondal Partridge. Source: UC Berkeley College of Environmental Design Archives. Anshen & Allen Collection (2013-08), "College of Chemistry. University of California, Berkeley: photos & graphics" (Box 8, Folder 110). Courtesy of the Rondal Partridge Archive.

designed roof slab, and precast wall panels 32 feet high hanging from the roof to support the floors below. As with the other buildings in the complex, terra-cotta screens concealed mechanical systems while maintaining chromatic continuity with adjacent campus structures. Hildebrand Hall exemplified Anshen & Allen's integrated approach to laboratory design, combining subterranean precision spaces, open communal terraces, and above-ground facilities for instruction and research into a coherent architectural whole.

LEGACY AND CONTINUITY

The postwar growth of the Berkeley campus created conditions for a radical transformation. The legacy of Galen Howard's Beaux-Arts monumentalism was giving way to modernist sensibilities shaped by Wurster's emphasis on functionalism, environmental integration, and interdisciplinary design. In this context of rising enrollments, urgent laboratory needs, and the broader rethinking of the campus as a modern research environment, Berkeley experienced a construction boom. During the 1960s, seventeen major buildings were erected on the central campus, and several additional facilities developed on peripheral sites. Among them, Anshen & Allen's work for the College of Chemistry stood out as one of the decade's most pivotal projects (Fig. 6).

The complex exemplified a transformative moment in campus architecture, where precision, functionality, and visual clarity converged to create buildings capable of accommodating both present and future generations of scientists. Anshen & Allen's approach redefined the architectural identity of the College and left a lasting imprint on Berkeley and the University of California system. This first commission established a model for university laboratories and research facilities that would later be revisited in works such as their Lawrence Hall of Science (1962–1970)—a competition-winning design that prevailed over proposals by Louis Kahn, Eero Saarinen, SOM, and Vernon DeMars—the

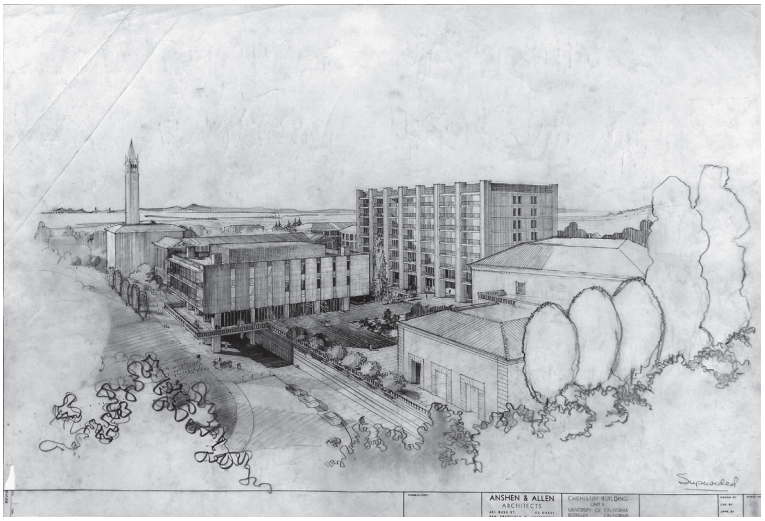

Fig 6. View of the College of Chemistry campus from the east, with Berkeley's iconic Campanile in the background, August 1960. Source: UC Berkeley College of Environmental Design Archives. Anshen & Allen Collection (2013-08), "College of Chemistry. University of California, Berkeley" (FF 70).

Space Sciences Laboratory (1963–1967), and several peripheral infrastructure projects. The same design principles also informed the Natural Sciences complex for UC Santa Cruz (1964–1969), extending the firm's approach to scientific architecture beyond Berkeley.

Today, the College of Chemistry occupies a group of seven principal buildings. Subsequent additions, including Tan Kah Kee Hall (designed by the architectural firm of Stone, Marraccini, and Patterson in 1997) and the upcoming Heathcock Hall[19], continue to respond to the evolving needs of the College, illustrating the ongoing dialogue between heritage and innovation initiated by the 1960s expansion. Much like the revolving demonstration stage of Pimentel Hall, which still turns after more than half a century, the ideas and discoveries fostered within these spaces continue to revolve through generations of students keeping the architecture and the science it shelters in perpetual motion.

ACKNOWLEDGMENTS

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19. "Heathcock Hall Construction Update", *UC Berkeley, College of Chemistry* [website], https://chemistry.berkeley.edu/heathcock-hall/construction-update

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