ESSAYS ON MODERN ARCHITECTURE
For the National Historic Landmark Program

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Chronology

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INTRODUCTION

The following essays and lists of architects are intended to further the study of modern buildings that may qualify as National Historic Landmarks. The buildings are organized by type and evaluated in terms of architectural significance.

American architects began to experiment with styles beyond the traditional neoclassical in the early nineteenth century. Styles were chosen for their historical associations and the buildings were considered architecturally pure versions of the past. By the end of the century, architects felt free to combine styles in an "eclectic" manner, without such concern for stylistic origins. New technologies and building materials encouraged this emerging experimentation. If this was all modern, however, it was certainly not "modernism." When European modernism arrived in the United States in the 1920s no one could mistake it for anything that went before. Historians quickly labeled this early phase of modern architecture the International Style. It was short-lived. The white, geometric forms were too bleak for Americans, especially since they came without the social meaning of their European counterparts.

The International Style was imported to the United States, but its early development was not without American influence. As European architects began experimenting in wild new forms of architecture, materials and forms, they studied the designs of Frank Lloyd Wright, whose work had been published in portfolios by 1910. Nothing Wright designed remotely resembled the sleek European buildings, but none could deny that his work was both modern and impossible to ignore. As these essays will illustrate, different forms of modern architecture with very different sensibilities were able to develop side by side in America. Frank Lloyd Wright and his Prairie School influenced all American architects, even immigrants like Richard Neutra and Walter Gropius.

By the 1950s, modern architecture had been popularized to the point where it lost its shocking newness. The developers of Levitttowns and other postwar subdivisions introduced popular versions of "the modern home." While middle-class Americans enjoyed the luxury of picture windows, carports and split-levels, the architectural profession moved beyond what most people would consider domestic space. Philip Johnson's famous Glass House was the architectural equivalent of the artist framing a blank canvas. Once everything had been removed but glass, leaving the essence of a building, there was no place left to go. Postmodernism developed in the late 1950s and early 1960s as a rejection of the blankness of modernism. It was all about adding layers of meaning, however artificial. Although refreshing at the time, this self-conscious style could not sustain itself. Architects of the twenty-first century are designing modern architecture that is colored by its own modernistic past. And, according to architectural histories, that past has already stood the test of time. Postmodernism only dates back about forty years, yet Robert Venturi's work appears in every survey.

The buildings discussed in the following essays were chosen as examples of modernism in America, roughly from the late 1920s to the early 1960s. Whether or not we appreciate these buildings, they represent a key moment in our history, a time when all

historical reference was thrown aside in favor of something new and unexplored. From our perspective, the explosion of modern architecture is dulled by familiarity. But in the 1920s a line was crossed that we can barely comprehend. Buildings went from being cultural books--their stories revealed in symbols and inscriptions rich in historical meaning--to being mute wonders of technology suggesting infinite possibility. The architectural historian and critic John Jacobus, Jr., reminds us that "nearly every present-day architect, whatever his station or real sentiment, at least professes allegiance to the outward materialistic manifestations of the creative revolution that took place with the International Style."[1] Modern buildings exemplify the search for the limits of building and design, the exploration of new interpretations of what is comfortable, and the effort to maximize human potential through building.

A Note on Essays and Architect Lists

The five building types were chosen in an effort to discuss the greatest number of potential NHLs possible. The buildings were selected purely from an architectural standpoint, and no research was done as to the feasibility of nomination or current condition. Some of the buildings are obviously worthy of NHL status; others deserve further research. The essays are intended as a starting point for future work and are by no means exhaustive.

The architect lists were developed to aid researchers in their search for criteria meeting architectural significance. In my opinion, the work of architects on the A-List qualifies as exceptionally significant in the history of architecture. These architects and architectural firms were nationally, and in most cases internationally, famous for their work, and their merit is demonstrated by honors (all have received the A.I.A. Gold Medal), critical acclaim from the press, and scholarly evaluation. In some cases, B-List architects also qualify, but further research is required. There are undoubtedly important architects who have not been listed. Buildings listed after the short biographies of A-List architects were selected as examples of their best work. The buildings on the B-List were chosen based on mention in popular books, magazines and encyclopedias. In both cases, the architects selected were active between the 1920s and 1960s. Architects who completed their first buildings after 1960 are not listed, though some are discussed in the essays and some of their buildings are considered for potential nomination.

A CHRONOLOGY OF MODERN ARCHITECTURE IN AMERICA

1832 Balloon frame construction is introduced in Chicago.

1847 The first steel section rolled at the Trenton Iron Works in Trenton, New Jersey

1857 The first elevator installed in a commercial building, the Haughwout Building, New York; founding of the American Institute of Architects

1858 Frederick Law Olmsted and Calvert Vaux design Central Park in New York City

1868 Design and Construction of the Equitable Life Insurance Building, first skyscraper designed with a passenger elevator; M.I.T. is the first university to establish a department of architecture

1876 The Centennial Exposition, Philadelphia

1879 The First Leiter Building, designed by William Le Baron Jenney, is the first skyscraper featuring skeleton construction

1885-87 Henry Hobson Richardson's Marshall Field Wholesale Store is constructed

1893 The World's Columbian Exposition in Chicago popularizes Beaux-Arts style

1896 Louis Sullivan publishes essay, "The Tall Building Artistically Considered"; Julia Morgan is the first woman admitted to the Ecole des Beaux-Arts, Paris

1901 Frank Lloyd Wright delivers lecture, "The Art and Craft of the Machine;" designs first prairie house

1910 Publication of the Ausgefuhrte Bauten und Entwurfe (first "Wasmuth Portfolio"), plans and drawings of Frank Lloyd Wright's work

1911 Publication of second Wasmuth Portfolio, photographs of Wright's work with an introduction by C. R. Ashbee

1916 New York establishes zoning regulations for skyscraper design; Frank Lloyd Wright invents "American System Ready-cut" method of prefabrication.

1917 America enters WWI

1918 Willis Polk designs the Hallidie Building, San Francisco, the first true example of the curtain-wall applied to a large urban structure; World War I defense housing programs administered by U.S. Housing Corp. (U.S. Dept. of Labor) and Emergency Fleet Housing Corp. (U.S. Shipping Board).

1919 Work of Wiener Werkstatte (Art Deco style) introduced to United States in New York; Walter Gropius founds and directs the Bauhaus in Weimer, Germany, and later in Dessau (until 1928)

1921-1922 Ludwig Mies van der Rohe introduces two glass skyscraper projects, idealized prototypes of his 1950s work

1922 The *Chicago Tribune* hosts competition for its tower and Eliel Saarinen's influential design takes second place.

1923 The first building standard for structural steel design published by the American Institute of Steel Construction

1928 Clarence Stein and Henry Wright design Radburn, New Jersey.

1929 The Crash and beginning of Great Depression; Mies van der Rohe's German Pavilion is displayed at the Barcelona International Exposition; John D. Rockefeller's restoration of Williamsburg, Virginia, begins; Richard Neutra's Lovell House is finished

1932 Completion of the Philadelphia Savings Fund Society (PSFS) Building in Philadelphia, the country's first International Style skyscraper; Museum of Modern Art director Alfred Barr coins term "International Style;" MOMA's show, "Modern Architecture: International Exhibition" opens and is sent on national tour; curators Henry-Russell Hitchcock and Philip Johnson publish accompanying book, *The International Style: Architecture Since 1922*; ;" Frank Lloyd Wright publishes *An Autobiography*

1932-1940 Design and Construction of Rockefeller Center, New York

1932-1950 Eliel Saarinen is director of the Cranbrook Academy of Art in Bloomfield Hills, Michigan

1933 "Houses of Tomorrow" are exhibited at The Century of Progress International Exhibition in Chicago, Illinois

1934 National Housing Act passed, providing Federal mortgage insurance and establishing the Federal Housing Administration (FHA)

1935 Federal Resettlement Administration begins "green belt" programs

1937 Frank Lloyd Wright designs Fallingwater; begins Usonian house development; receives commission for Johnson Wax building; Walter Gropius arrives in U.S. and becomes professor of architecture at Harvard University; Laszlo Moholy-Nagy establishes Chicago Institute of Design; U. S. Housing Authority established

1938 Mies arrives in Chicago and begins teaching at the Armour Institute (future Illinois Institute of Technology); MOMA organizes an exhibition of the Bauhaus from 1919 to 1928 and publishes catalog; Gropius becomes chairman of the architecture department at Harvard, a position he holds until 1953

1939 Mies commissioned to design Illinois Institute of Technology

1940 Alvar Aalto teaches part-time at MIT and designs dormitory on campus

1941 World War II begins

1945 Elizabeth Mock edits *Built in the U.S.A. 1932-1944*, an exhibition catalog for the Museum of Modern Art, New York; Eric Mendelsohn teaches at Berkeley; John Entenza introduces *Art and Architecture* magazine's Case Study Houses program, commissioning eight houses over the next five years

1946-47 William Levitt develops his first Levittown on Long Island

1950 George Howe directs the Yale School of Architecture

1951 Design and Construction of Mies van der Rohe's 860-880 Lake Shore Drive Apartments, the first apartment buildings sheathed entirely in glass; Design and Construction of SOM's Lever House, the prototype of prestigious corporate buildings; Louis Kahn designs his first museum, the Yale University Art Gallery, opened in 1953

1956 The National Park Service launches Mission 66, a ten-year park development and improvement program promoting modern architecture in the national parks

1959 Completion of Frank Lloyd Wright's Guggenheim Museum, New York

1966 the Museum of Modern Art publishes Robert Venturi's *Complexity and Contradiction in Architecture* (written in 1962)

THE SKYSCRAPER

The skyscraper is arguably the most important building type to emerge in the modern era. Its origins and early history are surrounded by myth, in part, because art and architectural historians of the 1920s and 1930s, such as Sigfried Giedion and Thomas Tallmadge, wanted to establish credibility for the modern movement. More recently, scholars have pointed out that the skyscraper concept dates back to antiquity, that the new building type was hardly an American invention, that it was not born in Chicago and that improvements in technology were not the only reason for its creation.[2] As this essay illustrates, the skyscraper rose from humble commercial beginnings to become the icon of the modern city. Nineteenth-century architects attempted to disguise its purpose, diminish its height and decrease its aesthetic presence. In the twentieth century, the skyscraper was celebrated for its functional form and architects went to great lengths to create the illusion of revealed structure. As it transformed the shape, economics, and demographics of the American city, the skyscraper reflected current architectural trends but also pushed the limits of contemporary technology.

The development of skyscraper technology in America can be traced back to the early nineteenth-century, when cast-iron facades and skeletons first appeared in masonry commercial buildings. James Bogardus, an inventor and engineer, used cast-iron fronts in his New York Laing Stores Building (1848, demolished) and Duane Street Factory (1848-9, demolished). In 1850 Bogardus patented an "all-iron building." By this time, the eight-story Jayne Building (1849-50, demolished) in Philadelphia by William Johnston featured a form of cast-iron skeleton construction.[3] After the introduction of the elevator in 1857 and a decade of experimentation with the new machinery, tall buildings

began to spring up throughout New York City.[4] Historians Winston Weisman and Carl Condit argue that the Equitable Life Assurance Society Building (1868-70, demolished; Gilman & Kendall, Architects and George B. Post) was the first skyscraper: it was double the height of the average office building, had been designed with a passenger elevator and featured iron construction. Equally credible historians have claimed that Richard Morris Hunt's Tribune Building (1872-75, demolished) and Post's Western Union Building (1873-75, demolished), both of which were two stories and over a hundred feet taller than the Equitable, "may properly be considered the first skyscrapers."[5] As this difference of opinion illustrates, technology played an important role in defining the new building type during the 1860s and 1870s and continues to be a preoccupation of contemporary scholars.

New York was the center of American culture in the nineteenth-century, but when the fire of 1871 devastated Chicago, a unique opportunity appeared for designers and engineers to experiment with new building methods. Over the next twenty years, improvements in skyscraper technology would take place in Chicago, where necessity created a demand for steel framing, better ventilation and every means of improved fire-proofing. William Le Baron Jenney (1832-1907), founder of the Chicago School, is usually credited for designing the first tall office building employing skeleton construction: the First Leiter Building in Chicago (1879, demolished), which had exterior brick pillars and interior iron columns.[6] Six years later, Le Baron Jenney's Home Insurance Building became the first with a complete metal skeleton, though some interior walls were load bearing. By 1890, the Manhattan Building boasted sixteen stories of pure skeletal construction. Perhaps more important than his contribution to the

design and engineering of tall buildings was Le Baron Jenney's studio, which included the pioneering architects Daniel H. Burnham (1846-1912), William Holabird (1854-1923), Martin Roche (1855-1927) and Louis Sullivan (1856-1924).

Although advances in building technology are particularly apparent in the history of the skyscraper and often overshadow stylistic advances, the aesthetic contribution of Henry Hobson Richardson is undeniable. Richardson, the first internationally famous American architect, became known in the 1860s and 1870s for his original houses and public buildings, particularly libraries. He was not considered a skyscraper designer, but his masterful Marshall Field Wholesale Store (1885-87, demolished), which was inspired by the granite warehouses of Boston, offered an aesthetic means of organizing the multiple levels of a tall building. According to architectural historian William H. Jordy, "Richardson's work immediately inspired, among others, three of the most impressive Chicago buildings to rise in the Loop during the late eighties…These are Adler & Sullivan's Auditorium [NHL], Jenney's second Leiter [NHL],…and…Burnham & Root's Monadnock."[7]

The influence of the Marshall Field Wholesale Store is, perhaps, least apparent in Burnham and Root's sixteen-story Monadnock Block (1884-85/1889-92), which marked the end of construction in masonry. The buildings are most similar in their conservative use of new technology--both employ cast and wrought iron columns and beams only as interior elements--and in their emphasis on pure, powerful form. It was by accident that Daniel Burnham and John Root broke the cultural boundaries of the skyscraper type. Their Reliance Building of 1894, a fifteen-story tower featuring Chicago windows, was originally designed to be five stories. When it was decided to build another ten, the

architects simply added additional levels without attempting to resolve the composition with a cap or cornice. Such an omission hardly seems revolutionary today, but at the time it was as scandalous as being seen in public without a hat.

Whether they admitted it or not, Victorian architects were wrestling with the problem of how to create a new building type with an antiquated architectural language. The vertical piling of floor upon floor had no architectural precedent, and while some practitioners were satisfied with merely extending the mid-section of a traditional five-story building, others demanded something more. During the last years of the nineteenth century, Louis Sullivan attempted to articulate a "functional" approach to skyscraper design, and, although his writings are often contradictory, he designed a series of influential buildings: the Wainwright in St. Louis (1890-91, NHL), the Guaranty in Buffalo (1894-95, NHL), and the Bayard in New York (1897-98, NHL). In the evolution of Louis Sullivan's skyscraper designs, architectural historians see the development of "two expressive compositions...the organization of the building as an elevational composition with a "beginning, middle and end," or as a structural composition made "tall by emphasizing the projecting vertical piers from base to cornice."[8] The first of these was a classic Victorian framework; the second, the idea of the "lofty" tower, became the quest of the next century. It was Sullivan, not his successors, who coined the term "form follows function," but, as his work illustrates, he understood this in a Victorian context. Despite the modern look and spirit of the tall building at the turn of the century, society was not ready to accept any structure without vestiges of traditional ornamentation, and during the early years of the twentieth century, Gothic, Art Deco and an assortment of other styles celebrated new heights. This eclecticism, also described as a

return to classicism, has been seen as a result of the conservative influence of the 1893 World's Columbian Exposition. For whatever reason, the work of the Chicago School failed to impress its generation, and only the architects who embraced neoclassicism, such as Daniel Burnham, went on to have continued success. By the turn of the century, technology was no longer the primary force behind skyscraper design because the most important building techniques had been mastered.

In the 1890s, the tower became the most popular method of packaging a building over twenty stories high. The use of the tower form as an appendage to the main structure dated back to the 1850s, when it appeared in the Jayne Building, and remained a popular means of adding height two decades later, as demonstrated by the Tribune and Western Union Buildings. One of the first and most impressive tower skyscrapers was Bruce Price's twenty-two story American Surety Building (1894-95), which stood 312 feet high. Towers were in vogue up to World War I, the Beaux-Arts Singer Building (1908, demolished) by Ernest Flagg is an important example, with more limited numbers appearing in the 1920s. New York's most famous early twentieth-century skyscraper, the Woolworth Building (1910-13, NHL), designed by Cass Gilbert, demonstrated the efficiency and beauty of mounting a tower on a wide base. This not only increased square footage, but also added novelty to a skyline with an overabundance of towers. Perhaps most important, the Woolworth Building became the symbol of New York City.

Since the skyscraper's birth, critics and promoters alike had speculated on its urban impact, and while some predicted that tall buildings would be the death of cities, others imagined the flourishing of a truly modern metropolis. If views diverged as to the future of urban America, all could agree with architect Cass Gilbert's turn of the century

assessment of the skyscraper as "a machine that makes the land pay." Greed was obviously a major factor in the growth and distribution of skyscrapers, and, therefore, in the shape of cities. The 1916 zoning laws in New York were an important catalyst in reconfiguring the design of tall buildings. New York designers were forced to carve away at a structure's silhouette in order to provide light and air for neighboring buildings; relatively small lots and lack of height restriction also favored the tower form. Chicago limited the height of skyscrapers until 1923, when a zoning law allowed for taller buildings but restricted total volume. This, along with the fact that Chicago lots tended to be larger, resulted in more blocklike buildings, usually featuring a central light court. These distinctions help to explain why the focus of skyscraper innovation shifted to New York during the 1920s.

But before zoning laws and market forces transformed the skyscraper, an important design competition played a major role in its aesthetic development. In 1922, the *Chicago Tribune* sponsored a competition for its new headquarters, challenging designers to create "the world's most beautiful office building." From over two hundred and fifty submissions, the *Tribune* chose John Mead Howells and Raymond Hood's Gothic design, a limestone shaft with set-backs ornamented by gargoyles and buttresses modeled after French cathedrals.[9] Eliel Saarinen was a close second with his "romantic tiered tower," one of several rejected proposals that influenced the next generation of skyscraper designers. By 1930, Hood's Daily News Building, if still gothic, was also considered a progressive, modern skyscraper. It was a contemporary of tall buildings the early twentieth-century called "modernistic," such as the Art Deco Chrysler Building (1928-30, NHL) by William Van Alen and the Empire State Building (1930-31, NHL) by

Shreve, Lamb and Harmon.[10] At 102 stories and 1,250 feet, the Empire State surpassed the Woolworth Building and the Eiffel Tower in height and quickly became the new symbol of New York. During the 1920s and 1930s, height had become an obsession among skyscraper designers and their patrons, both for reasons of profitability and fame; the title "world's tallest building" had its own value.

The construction of Rockefeller Center (1928-40, NHL), the New York complex of skyscrapers designed in relation to a central plaza and pedestrian promenade, took place throughout these transitional decades. By its completion, the Center appeared slightly old-fashioned, with its Beaux-Arts details, but, as a development, Rockefeller Center presented a new means of solving the problems of skyscraper congestion. The Center was planned with a series of low and high-rise buildings and a plaza that gave the ensemble urban continuity and allowed pedestrians room to appreciate the tall buildings. This was a new method of controlling the skyscraper--the creation of a "skyscraper city"--which provided another solution to the problems plaguing the planners who devised the 1916 zoning laws. It was also architectural collaboration on an unprecedented scale.

While Rockefeller Center was underway, George Howe and William Lescaze's Philadelphia Savings Fund Society Building brought the avant-garde International Style to America. The P.S.F.S. Building (1932, NHL) was designed so that each functional division--street-level shops, elevated banking room, rental office tower--was revealed on the facade. And yet, despite the show of function, the P.S.F.S. Building is very stylized in both its shape and use of fine materials. This building has been seen as a successor to the Chicago School tradition and even compared to Gropius's Bauhaus at Dessau.[11] In

2003, the National Historic Landmark P.S.F.S. Building has lost nothing of its modern aura.

Although Frank Lloyd Wright only designed a handful of tall buildings, his contribution to the development of a skyscraper aesthetic should not be underestimated. In the tradition of H. H. Richardson and Louis Sullivan, Wright sought a new American architecture, an "organic" architecture without ties to nineteenth-century eclecticism. Wright's 1895 project for the Luxfer Prism Skyscraper featured a ten-story skeletal grid of glass panels. In 1905, Wright introduced a bold design in his five-story Larkin Building in Buffalo, and the famous Robie house in 1909 broke with almost every convention. Wright's work found a limited audience in the United States, which was currently steeped in neoclassicism, but an enthusiastic welcome in Europe. European architects who would later immigrate to the United States, such as Mies van der Rohe, eagerly read his Wasmuth Portfolio of 1910 and 1911. In the 1930s, Wright designed the Johnson Wax Research Tower (1936-39, NHL) in Racine, Wisconsin, featuring rounded corners and strip windows that did, indeed seem to grow from within its administration building. His 1956 project for a mile-high skyscraper in Chicago seemed outlandish, as well as possible, at a time of such profound technological and social change. The fifteen-story Price Tower in Bartlesville, Oklahoma (1953-55) was based on a project for a twenty-story apartment building designed in 1928. If Frank Lloyd Wright stood apart from the mainstream development of American architecture, he also extended the realm of what was buildable.

The quest for a crystal tower that had been a fantasy for Wright and Mies van der Rohe in the twenties--both created several glass skyscrapers that remained in project

form--soon became a reality. Although the "first true example of the curtain-wall applied to a large urban structure," Willis Polk's Hallidie Building in San Francisco, which featured an all-glass facade, appears to have had little influence on East coast building technology.[12] The shimmering "glass box" type of skyscraper that has since become ubiquitous in American cities evolved during the 1940s and 50s. Pietro Belluschi studied Mies' campus buildings at Illinois Institute of Technology to create a pioneering skyscraper, his Equitable Savings and Loan Building (1948) in Portland, Oregon. This aluminum-skinned building featured cast-aluminum spandrels and tinted glass, which created the illusion of a smooth surface. The United Nations Secretariat (1948-50) in New York was designed by an international group of architects including Le Corbusier, who produced an early sketch of two skyscrapers housing the secretariat and the meeting halls on either side of a low scale General Assembly building. The final design was attributed to Wallace Harrison & Max Abramowitz. The relatively flat facades of the United Nations building contained over 2,730 green windows, while the narrower sides of each skyscraper were perfectly smooth, white marble. Harrison and Abramowitz went on to design the Alcoa Building (1952) in Pittsburgh, which was ornamented with prefabricated aluminum panels of "punched out" diamond shapes.

The firm of Skidmore, Owings and Merrill (SOM) reached an unprecedented level in both quantity and quality of skyscraper design, growing to become a model of contemporary architectural production by the 1960s. Skidmore, Owings and Merrill's production of significant skyscrapers began with the Lever House (1951), designed by Gordon Bunshaft, who was also inspired by the work of Mies van der Rohe. A block of Park Avenue was devoted to the new building, which was essentially two steel and glass

slabs, a horizontal first story with a vertical tower above, set back to provide open space. Lever House provided the relief from the traditional walled effect of tall buildings and was one of the earliest skyscrapers to deliver some of the promises of modernism: public space, light, and a sense of possibility. An early example of the metal and glass curtain wall at this scale, Lever House established a new standard for prestigious corporate design.

During the 1950s, no one did more to define the future of skyscraper design than Ludwig Mies van der Rohe, who achieved Sullivan's goal of form following function, and his own: less is more. Mies exposed the buildings' essential structural components, repeating them as ornamental units, with a technician's sense of proportion and scale. Mies' most famous early skyscrapers, the 860-880 Lake Shore Drive Apartments (1951), were the first apartment buildings sheathed entirely in glass. The Seagram Building (1958, with Philip Johnson) reached new heights in its lavish use of fine materials and technical perfection, as dictated by its Park Avenue, New York, location. In retrospect, the Seagram Building has been called the precursor of contemporary glass box skyscrapers; Mies' work was immediately imitated by a host of talented architects. According to Hitchcock, I. M. Pei's Mile-High Center in Denver (1954-55) "followed almost more closely the formula of Mies' Lake Shore Drive Apartments in Chicago than he did himself in the design of the Seagram Building the following year."[13]

One might compare the evolution of the skyscraper to a roughly parallel road taken by modern art on its path to total abstraction and the questioning of art itself. After the repeating structural module became the solution, there was no longer a problem to solve. Mies and his followers created beautiful buildings that could be appreciated as

works of art; imitators could do little but repeat the procedure. By the 1960s, two trends had become apparent: architects were beginning to rely on decorative elements and historical allusions to vary the formula and application of the signature curtain wall was becoming an easy method of updating older buildings. Postmodernism would bring a diversity to skyscraper production that, in retrospect, would reinvigorate the work of the 1950s. The irony of the ironic postmodern style is that its effort to legitimize both popular and historical references often resulted in a lack of any real meaning.

One example of a 1960s skyscraper that stood apart from its peers is the Ford Foundation Building (1967) in New York City, designed by the successor firm to Eero Saarinen--Kevin Roche, John Dinkeloo Associates.[14] The Ford Foundation building is praised in architectural history surveys for its considerate and inspiring use of interior space to alleviate the intensity of the typical corporate office building. Most of the offices look into an interior atrium that rises the full height of the building, reducing valuable corporate space but vastly improving the work environment. In an *AIA Journal* survey of the country's best buildings, practitioners, critics and historians nominated the Ford Foundation eleven times, ranking it among the top ten most significant buildings designed in the last two hundred years.[15]

The skyscraper has forever altered the urban landscape. In the words of former *New York Times* architecture critic Ada Louis Huxtable, the skyscraper is "essentially an economic formula," but it also represents "image, status, power and prestige...cultural dominance."[16] There is no more widely recognized symbol of modern architecture.

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The following tall buildings are listed as National Historic Landmarks:

Bradbury Building, California
Leiter II Building, Illinois
Marquette Building, Illinois
Reliance Building, Illinois
Rookery Building, Illinois
Woolworth Building, New York
Auditorium Building, Illinois
Bayard-Condict Building, New York
Carson, Pirie, Scott and Company Buildings, Illinois
Prudential (Guaranty) Building, New York
Wainwright Building, Missouri
Administration Building, Research Tower, Johnson Wax Company, Wisconsin
Equitable Building, New York
Flatiron Building, New York
Metropolitan Life Insurance Building, New York

Chrysler Building, New York
Empire State Building, New York
Philadelphia Saving Fund Society Building, Pennsylvania
Daily News Building, New York
McGraw Hill Building, New York
Rockefeller Center, New York

The following skyscrapers potentially meet the criteria for NHL designation:

Haughwout Building, New York, (J. P. Gaynor, 1857)
Monadnock Building, Chicago, Illinois (Burnham & Root, 1892)
Hallidie Building, San Francisco, California (Willis Polk, 1917)
Tribune Tower, Chicago, Illinois (John Mead Howells and Raymond Hood, 1922-1925)
Equitable Savings and Loan Association, Portland, Oregon (Pietro Belluschi, 1948)
United Nations Secretariat, New York, (Harrison & Abramowitz, 1950)
860-880 Lake Shore Drive Apartments, Chicago, Illinois (Mies van der Rohe, 1951)
Lever House, New York, (Skidmore, Owings and Merrill, 1952)
Price Tower, Bartlesville, Oklahoma, (Frank Lloyd Wright, 1955)
Seagram Building, New York, (Mies van der Rohe and Philip Johnson, 1958)
Ford Foundation Building, New York (Kevin Roche, John Dinkeloo, 1967)

THE MODERN HOUSE

In a 1970 essay, the architectural historian Vincent Scully describes the "suburban house" as a nineteenth-century invention and ends his discussion of its evolution in 1915.[17] As he has shown, the freedom of plan that we think of as modern dates back to Thomas Jefferson's Monticello (1770-1809), which "broke out of the box" over a hundred years before Frank Lloyd Wright's Prairie houses. During the nineteenth century, a staggering assortment of architectural styles were available for imitation, but by the turn of the twentieth century, a neocolonial vernacular began to emerge that would become increasingly popular by the 1930s. If the modern house was a product of a century's change, modernism as a style burst onto the architectural scene with hardly any notice and instantly challenged the modern tradition. During the 1920s, European modernism came to the United States, along with the assumption that architecture could bring about social transformation. In response to the wartime housing crisis, European architects designed low-cost efficiency housing, experimented with prefabrication and planned massive apartment complexes in greenbelts. Modernism in the United States never had such cause to be socially concerned, although attempts were made to devise prefabricated homes and low-income defense housing. Although modernism never became the dominant style for modern houses in this country, it forever altered American vernacular architecture. Today, new tract homes may come with porticos and Cape Cod details, but they also feature openness, lightness and flexibility, the watered-down legacy of modernism.

During the late nineteenth century, Henry Hobson Richardson led the architectural profession's quest for a new, distinctly American style of architecture. In

his most influential urban residence, the Glessner House in Chicago (1885-87, NHL), Richardson emphasized the distinction between public façade and private courtyard. One of his shingled houses, the Stoughton House in Cambridge (1882-83, NHL), demonstrates how a more open plan, with rooms grouped around large 'living halls' could transform the dark, Victorian house into a modern villa.[18] After 1880, Richardson had begun to seek an architecture "in even greater harmony with the American landscape," which, as James F. O'Gorman points out, would prove inspiring for Louis Sullivan and Frank Lloyd Wright, among others.[19] The addition to the Robert Treat Paine House in Waltham, Massachusetts (1880-81, NHL), and the E. W. Gurney House at Pride's Crossing, Massachusetts (1884-86), show the role landscape would come to play in developing a native, and later, "modern" American architecture. Charles Follen McKim and Stanford White both assisted in Richardson's office before forming their own firm, McKim, Mead and White, with William Rutherford Mead in 1879. Between 1870 and 1920, McKim, Mead and White received over a thousand commissions, making it the largest architectural firm in the world.[20] McKim, Mead and White's W. G. Low House (1887) in Bristol, Rhode Island, is probably their most published residential work, and its shingled triangular form remains inspiring. Richardson, McKim, Mead and White and Bruce Price, who designed the William Kent House (1885) in Tuxedo Park, New York, were the most significant architects of the era, designing houses with new types of floor plans, abstract massing and a close relationship to the American landscape.

Frank Lloyd Wright was a teenager when Richardson and his followers began to venture beyond Victorian eclecticism, but his architectural career would extend from before the Chicago Exhibition brought Beaux-Arts classicism into vogue until the decline

of modernism. And he would forever alter the history of American architecture. Wright's Prairie Style houses of the early twentieth-century came close to offering ordinary Americans a new option for modern living. As Vincent Scully has noted, in "the early twentieth century, a new vernacular was produced for a while in Chicago."[21] The Prairie houses, such as the Winslow House in River Forest, Illinois (1893-94), and the Willits House in Highland Park, Illinois (1902), would be followed by an even more "ordinary" type of house, the Usonian, which was usually built by its owners. The Herbert Jacobs House (1936), the first of the Usonian houses constructed, featured a concrete-slab floor providing gravity heating, a masonry core and dry wall construction. It featured an unusual heating system developed out of the "Korrean room" principle Wright encountered in Japan. The Goetsch-Winckler House in Okemos, Michigan, was constructed in 1939 as part of the master plan for a teachers' project at what is now Michigan State University. Wright's second Jacobs House (1948) in Middleton, Wisconsin, demonstrated his first use of the "solar hemicycle," with the rooms grouped in an arc, and its north side dug into the earth.

While Frank Lloyd Wright and his Prairie School followers were busy designing homes in the Mid-west, California architects were experimenting with their own regional design. Although the Prairie School undoubtedly influenced the work of Charles and Henry Green, the brothers' Gamble House (1907-08, NHL) is a singular work of Craftsman Style architecture. With its bold use of wood forms emphasizing traditional methods of joinery, its sleeping porches and terraces, and direct relationship to the outdoors, the house is suited to southern California. However, the complexity of California's turn-of-the-century regionalism is illustrated by Irving Gill's Dodge House

(1914-16, demolished), which not only appears more modern, but more at peace with California's early history. Dodge House recalled Los Angeles's Spanish heritage, but in a modern idiom, with clean, geometric forms that were both historical and new. The year Dodge House was completed, Gill's former associate in Louis Sullivan's office, Frank Lloyd Wright, was designing his first California residence, the Hollyhock (Barnsdall) House (1916/1918-21) in Los Angeles. Beginning in 1923, Wright employed a "textile-block building system" that he would use in four homes over the next two years—the Millard House in Pasadena, also known as "La Miniatura," the Storer House in Hollywood, and the Freeman and Ennis Houses in Los Angeles. In the textile blocks, square tiles of cast concrete were knit together with steel reinforcing rods, Wright not only found a method of creating the effect of a massive form (though the tiles were hollow), but also delicate stylistic motifs reminiscent of Southern California's Spanish and Amerindian associations.[22]

If European International Style modernism was too radical to have much of a following in the United States, it found a haven in Southern California during the 1920s. Two Viennese immigrants, Rudolph Schindler and Richard Neutra, were largely responsible for energetic buildings that brought sunlight and sea air into the living space. Both Schindler and Neutra briefly worked for Frank Lloyd Wright, and Schindler actually moved to Los Angles after supervising construction of Wright's Barnsdall House. On his own, Schindler designed the Lovell Beach House (1926) in Newport Beach, California, which, with its cantilevers and poured concrete frame, foreshadows 1960s brutalism. The other icon of International Style residential architecture, Richard Neutra's Lovell "Health" House (1929), was toured by fifteen thousand people after its

construction.[23] In addition to its novel style, the house featured an unusual number of standardized elements, such as a light steel frame assembled from standard units and polished plate windows set in standard metal frames.[24] Eventually, such changes in traditional building methods were intended to reduce the cost of materials and labor.

Neutra's house may have attracted public attention, but Buckminster Fuller's first Dymaxion House (1929) was far more unusual. The cylindrical form contained an inner service core and walls were suspended from a central tower; it was to be completely prefabricated, factory-produced and mass distributed. A dymaxion house was built in 1945 as a prototype for postwar housing in cooperation with Beechcraft, the airplane company based in Wichita, and has been restored for display at the Henry Ford Museum in Dearborn, Michigan.

In 1933, the Century of Progress Exposition in Chicago included a Home and Industrial Arts Group with a dozen experimental houses. The futuristic homes featured modern materials and building methods and new home appliances in an attempt to bring the out-of-date housing industry into line with more efficient manufacturing practices. The House of Tomorrow, designed by George Fred Keck and William Keck, demonstrated the use of glass and steel in housing design, an innovative structural system, and standardized construction. The Armco Ferro House, designed by Robert Smith, Jr., suggested the advantages of steel frames and Lustron enamel siding. Walter Scholer's Wieboldt-Rostone House, also steel frame, introduced a new building material, Rostone. And the Florida Tropical House, by Robert Law Weed, added a touch of whimsy with its pink tinted coral rock and built-in aquarium. Together, the group embodies the ideals promoted by the fair and by modern architects, the use of science and

technology as sources for design and as symbols of progress and future prosperity. After the Exposition six of the houses were transported by barge across Lake Michigan and established in Beverly Shores, Indiana. The four described above remain extant, although only the House of Tomorrow is in good condition.

As the Century of Progress homes illustrate, the stark modern style of the 1920s was quickly modified by "vernacular, folkish and regional features" in the thirties and forties. Henry-Russell Hitchcock writes that, "the popularization of the modern" occurred from 1935 to 1950, and during this time, regional influences resulted in architecture more appropriate for a given climate and location. Frank Lloyd Wright's influence was clearly seen in the work of many architects who attempted to highlight the unique aspects of their location; Alden B. Dow, designer of the A.B. Dow house in Midland, Michigan (1935-41), and Harwell Hamilton Harris, architect of the H. H. Harris House in Los Angeles (1939), were among those focusing on the importance of practical, comfortable houses. A "Westcoast Redwood" style developed in the Bay Area and spread to Portland, Seattle and other cities on the Pacific Coast. The "New England Modern" of the East Coast was more influenced by the Colonial vernacular promoted by McKim, Mead and White, but now abstracted beyond recognition. For example, historians describing the Gropius House (1937, NHL) in Lincoln, Massachusetts, designed by Walter Gropius and Marcel Breuer, emphasize its "sympathetic response" to the New England countryside. The house was "constructed of a wood frame with vertical board siding, painted brick, steel Lally columns, glass block, paving and low walls of irregular stones, and a prefabricated cast-iron spiral stair."[25] Perhaps the best example of the evolution from 1920s modern is illustrated by comparing Neutra's Lovell House with

his later work in Southern California; the Kaufmann House in Palm Springs (1946) Tremaine House in Montecito (1949), and Moore residence in Ojai (1954) are warmer, use natural materials and incorporate the outdoors.

In 1945, *Arts and Architecture* magazine launched the Case Study House program, an attempt to reinvigorate a profession that had been severely limited by the war. Led by its editor, John Entenza, the magazine became a client for eight architectural firms its first year, and within five years thirteen houses were built and seven projects created. The houses, all designed in Southern California, contributed to the region's reputation for radical design. Entenza hired established architects like Richard Neutra (whose 1948 house was citied for excellence of design by the A.I.A.) and William Wilson Wurster, but also less experienced designers, such as Charles Eames. The Eames House (1949) in Santa Monica was steel frame, with a bridge structure between two trusses that helped to elevate the house for a spectacular ocean view. Case study houses introduced exciting new methods of design and materials, and, in an historical sense, captured the contemporary essence of modernism. The magazine was sold in 1962 and the program concluded in 1966.

Two of the most photographed modern houses, Philip Johnson's Glass House (1949, NHL) in New Canaan, Connecticut, and Mies Van der Rohe's Farnsworth House (1951) in Plano, Illinois, demonstrate the extent to which modernism had matured after the war. These closely related houses are more about the design profession and the limits of modernism than realistic alternatives for living. The Glass House derived in large part from the Farnsworth, the design of which Johnson had included in the 1947 Museum of Modern Art exhibition of Mies's work; it was a metal-framed, rectangular glass box with

a brick service core at one end. In contrast, the Farnsworth appeared "to hover pristinely above the ground on its slim supports," with its open-air porch balancing the enclosed living area.[26] The doubtful practicality of such a "pure…exercise in architectural minimalism" was soon obvious.[27] The client, Edith Farnsworth, found herself a spectacle and described the experience as that of a caged animal. And yet, she visited the country retreat for the next twenty years and the public remained interested, if critical. Without a doubt, the Glass and Farnsworth Houses proved to be valuable investigations into the domestic experience and continue to intrigue the next generation of architecture students.

The richness of 1940s-50s modernism is illustrated by the contrast between the glass houses and the work of Frank Lloyd Wright and his followers. Wright's house for Sol Friedman (1949) in Pleasantville, New York, features a circular roof of wood and concrete. The plan is developed from two intersecting circles to form a main living and service area, and sloping masonry walls have crenellated windows. There is nothing translucent about this house, which seems part of the landscape despite its modern features. In terms of residential work, the most innovative architect influenced by Wright was Bruce Goff, who designed his first Prairie Style house in 1919 at the age of fifteen. His first private commission, the Unseth House in Park Ridge, Illinois (1934-41), marked the beginning of a career centered around eccentric houses perfectly suited to their owners. Of these, the Bavinger House (1950-55) in Norman, Oklahoma, is among the most famous and difficult to characterize. Historians Whiffen and Koeper use nautical imagery to describe the Bavinger House's "seashell curve in stone, which rises to support a mast from which tension cables descend to support 'floating' bedrooms as well as a roof and stairs."[28]

Modernism was no longer considered avant-garde by 1960; in fact, decades earlier it had become clear that modernism would not conquer society's ills. A "postmodern" response to modernism first became apparent in a handful of architects' designs for single family houses. Although the postmodern movement is beyond the scope of this study, its origins have stood the test of time. Robert Venturi wrote the seminal text for postmodernism, *Complexity and Contradiction in Architecture* in 1962, and then designed his mother's house as a manifestation of its principles. The Vanna Venturi House in Chestnut Hill, Pennsylvania, features the stripped-down look of modernist forms, but with all their meaning attached, along with the irony of juxtaposing new and old in shocking ways. Postmodernism had the noble goal of returning history to modernism without relying on old-fashioned styles. The new movement was most successful in its early years and at a small scale.

The regional possibilities of postmodernism were introduced on the Pacific Coast at Sea Ranch, one hundred and ten miles north of San Francisco. Sea Ranch (1964) was designed by a group of young architects eager to create a community of tasteful, environmentally sensitive houses. The landscape planner Lawrence Halprin chose Moore and Joseph Esherick to design the prototype buildings; Moore's firm—MLTW—included Donlyn Lyndon, William Turnbull, Jr., and Richard Whitaker. Sea Ranch consisted of "clusters and commons" of houses planned with environmental concerns in mind; the houses were relatively small, sited carefully in relation to meadow and sea, and sprinkled amidst undeveloped common areas. Sea Ranch has been called "…an inspired moment in the history of the American house, comparable to the emergence of Frank Lloyd

Wright's Praire House."[29] Today, the original Sea Ranch buildings are surrounded by much larger, more ostentatious homes and the group's integrity is threatened.

Although the modern house evolved in response to wartime, the need for mass housing, and other social and economic factors, it is important to remember that such homes were unusual, often the result of competitions, special patronage, or even commissioned by architects' relatives. In comparison with any other building type, house design and construction is simple and inexpensive. It is in the realm of house design, therefore, that architects were able to stretch the limits of the modern style, even to the point of discomfort. Designers could critique domesticity by removing solid walls, extending views and opening up floor plans. If in extreme cases such buildings were unfit for habitation, they also expanded our perception of "home." Modernism brought a new depth to our understanding of the modern condition, and it was in domestic architecture that the style found its most intimate representation. The selection of modern houses described in this essay illustrates the evolution of the house from its Victorian beginnings to its ultimate expression—the glass box—and back to something more comfortable. This building type, perhaps more than any other, is best understood in its evolutionary context, which demonstrates a preference for domestic adornment that persists in the modern era.

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The following modern houses are listed as National Historic Landmarks:

Frank Lloyd Wright Home and Studio, Illinois
Avery Coonley House, Illinois
Susan Lawrence Dana House, Illinois
Stoughton House, Massachusetts
Fallingwater, Pennsylvania
Darwin Martin House, New York
Robie House, Illinois
Taliesin, Wisconsin
Taliesin West, Arizona
Gropius House, Massachusetts

Miller House, Indiana
Glass House, Connecticut

The following modern houses potentially meet criteria for NHL designation:

Box Hill, Long Island, New York (Stanford White, 1853-1906)
Roos House, San Francisco, California (Bernard R. Maybeck, 1909)
Winslow House, River Forest, Illinois (Frank Lloyd Wright, 1894)
Willits House, Highland Park, Illinois (Frank Lloyd Wright, 1902)
Hollyhock (Barnsdall) House, Los Angeles, California (Frank Lloyd Wright, 1917)
Textile Block Houses, Los Angeles, California (Frank Lloyd Wright, 1923)
Lovell Beach House, Newport Beach, California (Rudolph Schindler, 1926)
Dymaxion House, Dearborn, Michigan (Buckminster Fuller, 1929; reconstructed 2000)
Lovell "Health House," Los Angeles, California (Richard Neutra, 1929)
House of Tomorrow, Indiana Dunes, Indiana (George Fred Keck & William Keck, 1933)
Jacob's I House, Madison, Wisconsin (Frank Lloyd Wright, 1936)
Hanna House ("Honeycomb House"), Palo Alto, California (Frank Lloyd Wright, 1937)
Jacob's II House, Middleton, Wisconsin (Frank Lloyd Wright, 1943)
Walter (Lowell) House, Quasqueton, Iowa (Frank Lloyd Wright, 1945)
Meyer-May House, Galesburg, Michigan (Frank Lloyd Wright, 1948)
Mossberg House, South Bend, Indiana (Frank Lloyd Wright, 1948)
Eames Case Study House, Santa Monica, California (Charles and Ray Eames, 1949)
Goetsch-Winckler House, Okemos, Michigan (Frank Lloyd Wright, 1939)
Kaufmann Desert House, Palm Springs, California (Richard Neutra, 1946)
Tremaine House, Montecito, California (Richard Neutra, 1948)
Farnsworth House, Plano, Illinois (Ludwig Mies van der Rohe, 1945-50)
Moore House, Ojai, California (Richard Neutra, 1952)
Vanna Venturi House, Chestnut Hill, Pennsylvania (Richard Venturi, 1962)
Sea Ranch, California (MLTW: Moore, Lyndon, Turnbull & Whitaker; 1965)

MODERN RELIGIOUS ARCHITECTURE

In stylistic terms, no building type is more anti-modern than the church or synagogue. The traditional architectural style of religious buildings is, to varying extents, an expression of a faith and its sacred ritual. New building types, such as the skyscraper and the airport are inherently modern. Private residences reflect contemporary lifestyles. Even art museums offer new methods of sheltering centuries of culture. Religious buildings, however, challenged the modern architect to represent sacred history in contemporary form. During the first half of the twentieth century, stylistic links with the past were a requirement for most churches and synagogues. But by the late 1940s modernism had entered mainstream American society, and modern architects began to introduce new interpretations of traditional religious buildings. As historian Phoebe Stanton has pointed out, "ministry by television, the establishment of new religious communities, and a need for buildings for social activities—which now play so large a part in the work of churches—…created "demands for which there are no historic or stylistic patterns."[30] Although architectural responses to such unprecedented change in American life varied greatly, a few similarities are apparent. Modern architects experimented with form, often focusing on a single geometric shape repeated throughout a building; concrete became a means of emphasizing mass and power; and a spiritual presence was often suggested by unusual sources of light or light filtered in unexpected ways. This essay describes some of the most successful attempts to create religious buildings for the modern era.

During the 1870s, Henry Hobson Richardson designed two churches that introduced his interpretation of the Romanesque and the stone architecture of Boston's

commercial buildings. The asymmetrical Brattle Square Church (1869-73) displays the round arches characteristic of Richardson's work. Trinity Church (1872-77, NHL) borrows from a range of French and Spanish Romanesque sources without direct association; it is a classic example of the American architectural style that would come to be known as Richardson Romanesque.[31] Although generally admired by his contemporaries, Richardson's buildings were exceptional, the harbingers of an American architecture that would not fully develop until Frank Lloyd Wright's career matured in the early twentieth century. The more traditional church designers active from 1870 to 1940 chose from an assortment of revival styles, such as the Gothic, Georgian, Spanish (Mission), Neo-Classical, Beaux-Arts and Renaissance, sometimes in combination. In the Madison Avenue Presbyterian Church (1906) in New York, for example, McKim, Mead and White gave their Colonial Revival vernacular a Byzantine flavor. One of the most prolific architects of religious buildings, Ralph Adams Cram (1863-1942), earned a reputation for "correct" Gothic churches and college buildings.[32] Along with his partners Ferguson and Goodhue, Cram designed the Cathedral Church of St. Paul in Detroit (1908-11), the United States Military Academy Cadet Chapel (1910) at West Point and Saint Thomas Episcopal Church (1913) in New York, among other important churches. After the partnership ended in 1913, the architects went on to design some of their best independent work: Goodhue's St. Bartholomew's Episcopal Church (1913), also in New York, praised as a modern version of the Romanesque and Byzantine styles, and Cram's Princeton University Chapel (1926), an extraordinary example of Late Gothic Revival.

The earliest modern churches were designed by American architects whose modernism evolved from a native architectural tradition dating back to Richardson's

Romanesque, both in terms of a new freedom of plan and new combinations of materials. While Cram and others spread the gospel of traditional revivalist styles, the type of churches acceptable throughout the country, Frank Lloyd Wright designed his first building in reinforced concrete, Unity Temple (1908, NHL) in Oak Park, Illinois. Wright himself described it as an example of the "architectural change from box to free plan…".[33] The spare, cubic church, with its interlocking geometric planes enclosing the interior space, corresponded to no architectural style or religious faith; historic associations were abstract. In contrast, Bernard Maybeck's Christian Science Church (1910) in Berkeley, California, borrowed from every historical period, to the extent that it finally suggested a new style, an "exotic revival." According to Henry Russell Hitchcock, Maybeck was "almost as bold an innovator as Wright, even though he employed for that a fantastically eclectic vocabulary of reminiscent forms."[34] The two shared a fascination for ancient and distant cultures, characteristic of nineteenth-century American architecture, and were able to create buildings for contemporary religious groups flourishing in the United States.[35] Another maverick architect in the Wrightian tradition was Bruce Goff, designer of the Boston Avenue Methodist Episcopal Church (1927-29, NHL) in Oklahoma. The building combined the Byzantine revival style, considered traditional for churches, with a new American style, the skyscraper Art Deco, which Goff called Modern Gothic. Although such innovative architects experimented with modern religious architecture in the first decades of the twentieth century, Americans were slow to accept modernism in such a traditional building type.

It was not until the 1940s that some of the most famous European modernists received significant church and synagogue commissions in America, and they brought

with them their reaction to International Style architecture. Eliel and Eero Saarinen and Erich Mendelsohn, European immigrants and leaders of the Expressionist movement, designed religious structures that contradict the stark coldness of early modernism. Expressionist buildings were warm, "expressive" of faith, and emotionally powerful. The Saarinens' First Christian Church (1940-42) in Columbus, Indiana, is one of the earliest influenced by European modernism; although without any trace of the predominant revival styles, the church bell tower suggests Christian tradition. As the church minister noted, the spare, modern style of the building expressed the congregation's desire to "restore the simplicity of the church as described in the New Testament."[36] The Cleveland Synagogue and Community Center (1946-52), designed by Erich Mendelsohn in Cleveland, Ohio, departed from the traditional Near Eastern forms often used for synagogues. Constructed of reinforced concrete with a dome 100' in diameter, it was to symbolize the unity of heaven and earth. Christ Lutheran Church (1949-50) in Minneapolis, Minnesota, was the elder Saarinen's final work, in collaboration with his son, Eero, who designed the educational and fellowship building across the courtyard. According to the pastor, the new building provided an ideal setting for the Lutheran liturgy, accommodated the need for excellent acoustics and created a calm, reflective mood by focusing attention on the altar.[37]

Eero Saarinen's Kresge Chapel at the Massachusetts Institute of Technology (1953-56), his smallest religious building, is most often included in architectural histories of the modern movement. At M.I.T. Eero Saarinen broke away from his father's preference for the "rambling façade composition," and the modular regularity of Mies, to design a chapel that perfectly illustrates the modernists' new methods of using light as an

emotive force. The brick cylindrical building is set into a pool, allowing low arches cut into the building to capture the reflection of sun on the water. Light from above illuminates the altar and creates a shimmering sensation as it reflects against a suspended metal screen. Over the next decade, Saarinen experimented with other geometric forms at the Kramer Chapel (1955-58) of Concordia Theological Seminary in Fort Wayne, Indiana, which is triangular in shape and North Christian (1963, NHL) in Columbus, Indiana, which features a hexagonal central building with a 191-foot spire.

Le Corbusier's Chapel of Notre Dame du Haut at Ronchamp (1950-55), France, is arguably the most influential and highly photographed modern religious building. The unforgettable seashell-like concrete form is pierced by irregularly shaped colored glass, demonstrating Le Corbusier's belief that "the key is light and light illuminates shapes and shapes have an emotional power…".[38] According to Harvard art historian Neil Levine, Frank Lloyd Wright's First Unitarian Church (1946-51) in Shorewood Hills, Wisconsin, was one of his "emphatically representational designs of the 1940s that set the stage for the organic expressionism of Le Corbusier's Ronchamp chapel."[39] Wright's building may have been an inspiration to Le Corbusier, but it bears little resemblance to the French chapel. A "prairie" church, it was primarily constructed of oak and limestone, which was brought to the site by members of the congregation. The triangular roof design suggests hands in the position of prayer. The mysterious lighting of the pulpit area is both organic, in the Wrightian tradition, and characteristic of contemporary Expressionist architecture. Wright's son, Lloyd (Frank Lloyd Wright, Jr.), designed his best known work at this time, the Wayfarer's (Swedenborg Memorial) Chapel in Palos Verdes, California. The similarities with his father's work are obvious, particularly in the

redwood framing of the chapel, which resembles that of Taliesin West. The chapel features prisms of glass combined with triangles set in blue tile. Like many modern churches, the essential structure suggests that of a Gothic vault.

The synagogue and church Frank Lloyd Wright designed in the 1950s illustrate his fascination with geometric forms, which can be traced to his design for Unity Temple (1905-8). Wright "selected a distinct geometric figure for the building's basic form as his characterization of the religious life of a congregation."[40] Beth Shalom Synagogue (1953-59), Elkins Park, Pennsylvania, is a composition of dynamic triangular shapes, an equilateral triangle in plan that rises as a hexagon in elevation. Supported on sturdy concrete beams, its sloping glass walls become tent-like. Wright is purported to have described the synagogue as a "mountain of light." Whereas the synagogue was an exercise in all aspects of the triangle, the Annunciation Greek Orthodox Church (1956-61) in Wauwatosa, Wisconsin, explored the religious and architectural power of circles. According to many sources, Wright was inspired by Byzantine prototypes, particularly Santa Sophia, the mother church in Istanbul. Reinforced concrete cylindrical trussing supports the concrete shell dome, originally surfaced in blue ceramic tile. The truss system is then supported by the four concrete piers that anchor a Greek cross in plan on the first floor. At balcony level, the cylindrical trussing is echoed in the fenestration pattern.[41]

The work of Frank Lloyd Wright, however modern, always alluded to historical tradition, and was, therefore, consistently very different from the work of his contemporaries. Wright rejected the International Style and any movement that resulted in architectural conformity. By the 1950s, mainstream American architects were

discovering the benefits of modernism as a style particularly useful in non-denominational expressions of spirituality. The chapel for the United States Air Force Academy (1956-62) in Colorado Springs, contemporary with Saarinen's Kresge Chapel, was designed by SOM as part of their "Miesian campus" of flat-roofed curtain-walled buildings arranged on a grid. The chapel's basic structure is composed of geometric steel-tube framing with aluminum panels separated by narrow bands of stained glass. Most impressive is the "relentless repetition of spiky bays" that conjures up "the nave and spires of a Gothic church and the German Expressionist crystalline forms popular after the First World War" in the minds of architectural historians, and, more readily, the folded plane wings on the flight deck of an aircraft carrier.[42] In terms of structure, the chapel was "one hundred prefabricated tetrahedrons of welded steel pipe…assembled on a rectangular plan….The resultant cage was sheathed in silvery aluminum and set with strips of colored glass."[43]

While SOM unveiled its highly publicized campus plan and dramatic chapel, a much smaller but equally interesting religious building was constructed in the red rock hills of Sedona, Arizona. The Chapel of the Holy Cross (1956) was a concrete and glass structure designed around a colossal cross and built into living rock. A serpentine concrete ramp leads from the parking area up to a courtyard in front of the chapel. Through the paned-glass entrance façade, the view extends to the concrete cross spanning the building's opposite wall and to clouds outside that seem to float above the alter. Although the chapel conforms to the liturgy of the Roman Catholic Church, and displays the cross in an explicit fashion, it also manages to rise above its particular religion; tourists from all faiths make pilgrimages to the building. The chapel gave its architects,

the San Francisco firm Anshen and Allen, immediate recognition in *Architectural Record* and other major architectural journals.

As we have seen, modern architects of the 1950s were relentless in their experimentation with light and its symbolic spiritual qualities. Although Philip Johnson's Kneses Tifereth Israel Synagogue (1956) in Port Chester, New York, is essentially based on a Miesian plan, the architect warmed it up by introducing "colored glass in slots between the vertical slabs with which the visible steel frame is filled and also a curved-awning-like ceiling of plaster…."[44] Johnson's Roofless Church (1959-60), New Harmony, Indiana, took the issue of lighting to its extreme. The building is essentially an outdoor room, an expansion of his concept for the famous 1949 Glass House. From a distance the church appears to be all roof, a "shingled" billowing form pinned down at six points, flower-shaped in plan. Architectural historians have found it difficult to describe the building, but agree that the central, unroofed space gives the church its "distinctive quality."[45]

With several decades of experimentation behind it, Modern religious architecture took on new forms in the late 1950s, forms that varied widely by architect, religious affiliation and region. Compare, for example, Richard Neutra's Community Church (1959-61) in Garden Grove, California, with one of the most abstract designs of the modern era, the First Unitarian Church and School (1959-63) in Rochester, New York, designed by Louis I. Kahn. Neutra is not known for his religious buildings, and the "Community Drive-In Church" is more significant as a cultural phenomenon than a place of spiritual fulfillment. Glass walls opened out to the parking lot, where families could participate in the service from their automobile-pews. The Tower of Hope, designed in

the mid-60s by Sergei Koschin and Dion Neutra, loomed over the sanctuary, "more prominent than anything else in Orange County except the nearby 'Matterhorn' at Disneyland."[46] In contrast, Kahn's First Unitarian Church is a quiet building, the exterior offering no indication of its purpose. The interior is a meeting hall, with little to convey a religious feeling but soft light illuminating the corners of the room. Kahn designed the church around a centralized form, but emphasized the individual use of subservient spaces. His description of the church suggests a flexible attitude toward building use. "I drew the ambulatory to respect the fact that what is being said or what is being felt in a sanctuary was not necessarily something you have to participate in. And so you could walk and feel free to walk away from what is being said. And then I placed a corridor next to it—around it—which served the school which was really the walls of the entire area."[47] At the First Unitarian Church, Kahn sacrificed the purity of a modern design to accommodate the congregation. This diminishing of form, in a sense removal of the architect's ego, was essentially postmodern in its conception. Religious buildings of the next few decades would reflect such thinking, sometimes to the point of losing all sense of self, place, and spiritual force.

The depth and variety of modern religious architecture is illustrated by the work of Pietro Belluschi, who became dean of the M.I.T. architecture department in 1951, and Marcel Breuer, a professor at Harvard. Belluschi, arguably the most prolific architect of modern religious buildings, was the principal designer or collaborator on over forty completed works. The Italian-born Belluschi immigrated to the United States in 1923 and became nationally famous in the 1940s, primarily for his Equitable Savings and Loan Association building completed in 1948. That year planning began for First Presbyterian

in Cottage Grove, Oregon. From its origins the church was a cooperative effort, the result of group meetings with the congregation and continual revision of drawings to accommodate its wishes. In this traditional wood frame building, the nave and chancel were designed as a single space, with the nave brightly lit to symbolize the connection to the outside community. The Douglas fir that sustained the local economy was used in the board and batten exterior. Even Belluschi's much more elaborate Portland church, Central Lutheran Church (1948-50), featured wood arches, wood screens, glass, brick and bronze.

While Belluschi designed relatively understated modern religious buildings, Marcel Breuer's works were massive, concrete structures, capable of humbling the boldest parishioners.[48] Before he had ever designed a ceremonial building, Breuer was chosen over Gropius, Neutra and others as the architect for St. John's Monastery and College in Collegeville, Minnesota. The Abbey Church (1953-61), in which Breuer collaborated with Hamilton P. Smith and the Italian engineer-architect Pier Luigi Nervi, is a blend of Christian iconography and machine-age symbolism. The free-standing trapezoidal bell banner is pierced by a horizontal rectangle for bells and a vertical opening for a cross, all of which rests on four sculpted supports forming an archway entrance to the church. The main building's honeycombed concrete and glass façade is devoid of religious symbolism. One architectural landmark survey praises the church as an example of "America's most remarkable religious structures."[49] Breuer's work at a Benedictine convent, the Annunciation Priory (1959-63) in Bismarck, North Dakota, is equally powerful; the one-hundred-foot high concrete bell tower is the focus of the Priory's campus, a cluster of low-lying buildings organized into a rectangular "island."

The St. Francis de Sales Church (1964-66) in Muskegon, Michigan, a collaboration between Breuer and Herbert Beckhard, is a hyperbolic paraboloid with side walls of the nave describing a double curve and reaching some seventy-five feet high. The apse, dramatized by the convergence of a daring system of concrete planes and rigid arches, is illuminated by cut-in skylights that direct intense natural light from above. Heroic in aspiration and evoking the Gothic in spirit, Breuer sought the courage "to defeat gravity and to lift the material to great heights, over great spans—to render the enclosed space a part of infinite space."[50]

The scholar of religious history Peter W. Williams has emphasized that the architectural history of churches and synagogues is a relatively unexplored topic. As this brief essay has illustrated, modern architects used the design of religious architecture to experiment with new forms and symbolism, but such efforts often stood alone. More than any other building type, churches and synagogues represent the conflict between the past and the future that modern architects are able to deny, to varying extents, in secular commissions. Religious buildings of the modern era are relatively scarce and often the only example of a particular architect's effort to render spirituality in built form. For these reasons, and the timeless power of such buildings to stir the emotions, modern religious architecture demands further study.

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The following modern religious structures are listed as National Historic Landmarks:

Unity Temple, Illinois
First Church of Christ, Scientist, California
Boston Avenue Methodist Church, Okalahoma
North Christian Church, Indiana
First Baptist Church, Indiana
Trinity Church, Massachusetts

The following modern religious buildings potentially meet criteria for NHL designation:

St. Bartholomew's, New York (Bertram Grosvenor Goodhue, 1913)
First Christian Church, Columbus, Indiana (Eliel Saarinen, 1942)
Cleveland Synagogue and Community Center, Ohio (Erich Mendelsohn, 1946-52)
First Presbyterian, Cottage Grove, Oregon (Pietro Belluschi, 1951)
Wayfarer's Chapel, Palos Verdes, California (Lloyd Wright, 1951)
First Unitarian Church, Shorewood Hills, Wisconsin (Frank Lloyd Wright, 1946-52)
Mount Zion Temple and Center, St. Paul, Minnesota (Erich Mendelsohn, 1954)
M.I.T. Chapel, Cambridge, Massachusetts (Eero Saarinen, 1955)
Chapel, Air Force Academy, Colorado Springs, Colorado (SOM, 1956)

Chapel of the Holy Cross, Sedona, Arizona (Anshen and Allen, 1956)
Roofless Church, New Harmony, Indiana (Philip Johnson, 1959-60)
Abbey Church (St. John's University Church), Collegeville, Minnesota (Marcel Breuer, Hamilton Smith, Pier Luigi Nervi, 1956-61)
Annunciation Greek Orthodox Church, Milwaukee, Wisconsin (Frank Lloyd Wright, 1959-61)
Community Church, Garden Grove California (Richard Neutra, 1959-61)
Priory of St. Mary and St. Louis, St. Louis (Creve Coeur) Missouri (Hellmuth, Obata & Kassabaum, 1962)
Annunciation Priory, Bismarck, North Dakota (Marcel Breuer and Hamilton Smith, 1959-63)
First Unitarian Church and School, Rochester, New York (Louis Kahn, 1959-63)
St. Francis De Sales Church, Muskegan, Michigan (Marcel Breuer and Herbert Beckhard, 1964-66)

THE MODERN COLLEGE CAMPUS AND MODERN BUILDINGS ON CAMPUS

The college campus, a planned landscape of buildings and open space, essentially originated in America. Although colonial builders imitated models they knew, such as Oxford and Cambridge, American collegiate design was shaped by many factors: the scarcely populated new country, the experience of the builders, and the availability of building materials. In the end, none of the nine colleges designed before the Revolution shared the same plan. Harvard laid out its original buildings in a three-sided courtyard, Yale in a line facing a green, and William and Mary in a symmetrical relationship to a central building. The idea of a college campus developed from the placement of new buildings in a rural setting. Nassau Hall, the building designed for the College of New Jersey (Princeton University) in 1757, stood a good distance from the road, a situation that gave rise to the first use of the term "campus" in a collegiate context. The Princeton plan of a single building in a green space was imitated at Brown, with University Hall in 1770; Dartmouth, with Dartmouth Hall in 1784-91; and Rutgers with Old Queen's in 1809.[51] Unlike their European counterparts, American colleges usually included residential facilities, which increased the need for campus planning and the resemblance of the campus to a small, self-sufficient city. By the nineteenth century, the "academic village" created by Thomas Jefferson at the University of Virginia (1817-27, NHL) in Charlottesville had become a popular model for new campuses.

The American tradition of campus planning was brand-new on the West Coast in 1888, when a significant early example of the enclosed quadrangle, the Stanford Quad, was introduced at Stanford University in Palo Alto, California. Two years earlier, Leland

Stanford had commissioned landscape architect Frederick Law Olmsted to design a master plan for Stanford. The architect originally chosen for the work was Henry Hobson Richardson but, after his untimely death, the job went to his successors, Shepley, Rutan, and Coolidge of Boston. The firm designed the buildings in the Mission Style, incorporating a timeless sense of monumentality and modern ideas about planning for the future; the self-sufficient collegiate city might expand indefinitely.

During the first decades of the twentieth century, new classical buildings were designed at M.I.T., and Harvard erected Georgian-Colonial dormitories, but the traditional style for American campuses remained the Collegiate Gothic modeled after Oxford and Cambridge. When the College of New Jersey became Princeton University in 1896, it hired Cope and Stewardson to design a series of new buildings in the Gothic style; Blair Hall, with its imposing tower, recalled the Tudor gates of English colleges.[52] The famous gothic revivalist Ralph Adams Cram completed Princeton's Graduate College in 1913. It is easy to forget that contemporary architectural critics considered such buildings modern. As late as 1928, Yale's Harkness Memorial Quadrangle (1917), a rambling Gothic structure, was praised as "one of the gems of modern American architecture."[53]

Before 1940, the beginning of a shift toward modernism was most apparent in the design and planning of new college campuses. In 1938 construction began on two such campuses—Florida Southern College in Lakeland and Illinois Institute of Technology in Chicago—designed by the two most famous architects in the country, Frank Lloyd Wright and Mies van der Rohe. Although both colleges were created from scratch in a modern style of architecture, without any preexisting buildings on site, the results could

not be more different. Wright designed a series of rambling, concrete-block buildings said to emerge from the surrounding landscape; Mies's academic village was glass and steel frame buildings on a grid, intended to show the man-made in contrast with nature. The buildings at Florida Southern are connected by continuous covered esplanades to form a single structure that expands into a building and then is reduced to a walkway or a garden. In a sense, this attitude recalled the historical origins of the American college, with its monumental main building, and underscored the interdisciplinary nature of education. At ITT, Mies discovered the clearest expression of every form, reducing all elements to what he perceived as their essence; the buildings were discreet, rational and expressed a mathematical perfection that could be taken no further. Both campuses illustrate what Wright and Mies might have done if given the opportunity to design and execute a city plan.[54]

By the mid-1950s, modernism was the style of choice and, in the work of many architects, signs could be seen of a new effort to combine historical associations with aspects of the International Style. A comparison of Mies's ITT campus with Philip Johnson's master plan for the University of St. Thomas (1957) in Houston, Texas, shows the extent to which Johnson had abandoned the pure rectilinear forms of his mentor. The architectural historian John Jacobus, Jr., calls the St. Thomas plan "a blend of Mies's Industrial Classicism of the 1940's with the Romantic Classicism of the 1820's," which he associates with Jefferson's University of Virginia campus.[55]

The mid-twentieth century was a turning point for modern architecture on the college campus. Walter Gropius and The Architects' Collaborative designed one of the first large groups of International Style buildings in a collegiate setting, the Graduate

Center (1949) at Harvard University.[56] The complex of eight buildings has been criticized for its rigidity, and certainly by its completion American architecture was beginning to move in new directions. If Harvard remained somewhat conservative, Yale University welcomed the designs of modern architects with a more flexible idea of modernism. Yale's president, A. Whitney Griswold, convinced trustees to experiment with modern architecture and hired Louis Kahn to design the Yale University Art Gallery (1951-53). The four-story Mellon Gallery, which stood at the corner of Chapel Street, featured a brick exterior with belt courses mirroring the lines of its neighboring buildings, including the 1927 Beaux-Arts gallery by Egerton Swartwout. Inside, however, the building boasted a modern tetrahedral ceiling, which provided both decorative space and room for internal ducts and lighting. According to Vincent Scully, Kahn's first major commission contributed in "good part in the formation of the Brutalist aesthetic."[57] Twenty years later, Kahn designed his last museum, the Yale Center for British Art (1969-74) across the street from his pioneering effort.

Eero Saarinen's contribution to the new modern movement at Yale made no attempt to blend in with the surroundings. For his alma mater, Saarinen designed the David S. Ingalls Hockey Rink (1956-59) which, with its giant reinforced-concrete parabolic arch, has "an odd resemblance to an inverted boat."[58] Saarinen had learned from his recent work on Kresge Auditorium (1953-56) at M.I.T. and adjusted the visual downward thrust of the concrete dome by lifting both of the ends up with cantilevers. The contrast between the interior of the roof, covered in natural timber boarding, and the exterior black neoprene waterproofing solution is typical of Saarinen. While the rink was under construction, Saarinen began designing Ezra Stiles and Morse Colleges (1958-62),

two residential/community buildings on a tight site between a neo-Gothic gymnasium and the graduate school. His attempt at reconciling the architectural styles involved covering the concrete with masonry and creating narrow, fortress-like windows.

Any anxiety over the integration of Saarinen's buildings into the Yale campus was overshadowed by the work of Paul Rudolph, who designed what one historian called "the most provocative American building of the decade." Rudolph, the chairman of Yale's art and architecture department, created the Art and Architecture Building (1958-64), a structure not only bewildering in its thirty-seven levels, but controversial in its techniques; the concrete was formed and treated to appear weathered, an effort that could only be considered postmodern.[59] While the Art and Architecture Building was raising eyebrows, Rudolph completed the Married Graduate Student Housing (1962) complex. These inherently conservative residential buildings feature concrete lintels and brick walls and provide an example of how Le Corbusier's influence became part of "the fundamental vernacular architecture of the 1960s."[60]

The explosion in modern architecture at Yale continued with the construction of two additional major buildings in 1964, the Beinecke Library by Gordon Bunshaft of SOM and the Kline Science Center by Philip Johnson. Each had a demanding program—the requirements of quality archival storage and a functioning research laboratory—that shaped its design. The Beinecke has been compared to a gigantic jewel box with its curtain walls of steel trusses framing translucent marble slabs.[61] Alan Gowans observes that the Beinecke's "glowing amber walls created a most un-Modern reverential atmosphere that strikingly recalled the effects of mosaics and windows of early Christian basilicas, most especially San Vitale in Ravenna." [62] Gowans sees such associations as

carrying on Yale's Collegiate Gothic tradition in "subliminal medieval forms." Other critics have remarked on the building's blatant lack of human scale in the selfish "quest of heroism."[63] The Kline Center is also an ornamental container, articulated to appear as a grouping of towers, but actually a clever covering for an interior designed by scientists. With its rich salt-glazed brick and defensible hilltop site, the Science Center also recalls the medieval era as it foreshadows postmodernism. Architectural critics agree that the Kline Tower successfully blends in with surrounding buildings, such as those in nearby Pierson-Sage Square (1913-24), and acknowledges its role as part of a campus plan.

Yale was unique in adding such a large number of remarkable modernist buildings to its traditional campus. More common was the addition of specific structures fulfilling special needs, such as Baker House Dormitory (1948) at M.I.T. by Alvar Aalto and Ferry Cooperative House (1950) at Vassar by Marcel Breuer. Aalto was teaching at M.I.T. when he designed Baker House, a design combining International Style "rational purism" and historical forms.[64] Among students, the building would become best known for its rough exterior walls with protruding bricks that aspiring rock climbers scale to hone their skills. The "S" shape of the building follows the curves of the Charles River, allowing the maximum number of student rooms to find views of the water. A contemporary of Baker House, Ferry Cooperative Dormitory also compromised stark modern design in the interest of its users. The architectural historian William Jordy devotes a chapter of his book on modernism to Ferry Dormitory, which he calls "a modest building" and "somewhat bland."[65] As Jordy points out, by the 1940s International Style modern architecture had been "domesticated" to suit a public that required more comforts (however superficial) than the severe and stripped down avant-

garde style had to offer. Although Ferry House might be seen as progressive in its purpose—to provide unsupervised living space for female college students—the design includes many traditional elements that purists would consider concessions to a bourgeois tradition. A variety of textured materials are featured, such as contrasting floor materials and unpainted cypress siding for the window paneling. Rather than focusing on the formal properties of open space, Breuer chose partitions for privacy, even at the expense of abstract perfection. Aalto domesticated Baker House by using rough red brick, and its unique undulating shape demonstrates how real use would supercede pure form in American modern architecture.

Perhaps the most widely publicized new campus design of the 1950s was SOM's Air Force Academy (1955-62) in Colorado Springs, Colorado. Pushed up against the Rocky Mountains but overlooking endless plains, the site was ideal for a college dedicated to the modern science of aircraft. The campus was laid out on a Miesian grid, and since the buildings were all new, the architects were able to create a unified plan in which all sense of proportion disappeared; the geometric order of the buildings perfectly mirrors that of a military institution. The parade grounds, with a landscape plan by Lawrence Halprin, are enclosed by low, monotonous buildings, such as quarter-mile-long Vandenburg Hall. Only the chapel (discussed in the previous essay), which stands alone on an elevated platform, breaks the grid pattern with its distinctive shape, height and decoration. Although the Air Force Academy has been criticized for its "austere atmosphere," the design is generally seen as appropriate for its purpose. The campus is a popular tourist attraction.[66]

The Air Force Academy commission offered its architects complete freedom to create a campus; the "clean slate" was located a significant distance from historic Colorado Springs. As we have seen, it was more typical for architects to design in the midst of an established campus, where compromises had to be made for both aesthetic and practical reasons. In their design for an Art and Science Building at St. John's College (1958), Annapolis, Maryland, Richard Neutra and Robert Alexander were commended for their ability to integrate old and new. The modern brick and flagstone complex—classrooms, an auditorium, laboratories, a planetarium—stood in close proximity to venerated seventeenth-century buildings. In true modernist fashion, Neutra explained his designs through abstract principles suited to the architectural style; the building attempted to "grasp and express this faith in values that transcend mere historic or modish relativities." A modernist trained in the International Style, Neutra hoped to capture a timeless essence.[67]

In 1957, work began on Louis Kahn's Alfred Newton Richards Medical Research Building and Laboratory at the University of Pennsylvania. Although Kahn also faced the challenge of integrating a new structure into an historic campus plan, his program for a laboratory facility required many modern concessions. In its simplest form, the building is a "central service block" surrounded by three laboratory towers, each with peripheral stairs. Although modern in every sense, the building is also a complicated series of geometric solids and voids that manages to harmonize with its neighbor, a hulking "Elizabethan" quadrangle (1895-1907) by Cope and Stewardson. Architectural historian William Jordy gave Kahn's laboratory the highest possible praise, calling it a building that "has taught the profession" and an amalgamation of the "achievements of

the three greatest architects of the first half of the twentieth century [Le Corbusier, Mies and Wright]."[68]

By the 1960s the full range of modernism could be seen in new college buildings—vestiges of the International Style and the beginnings of what would become postmodern. Le Corbusier's only building in the United States, the Carpenter Center for the Visual Arts at Harvard University, was designed in 1959 and completed in 1962. With its geometric concrete forms, free plan, and sinuous ramp through the building, the Carpenter Center appeared to some as an "historic" example of the International Style and to others as an innovative work in the "geometric style."[69] Unfortunately the ramp did not function as intended, in large part because the site lacked the density necessary to make it a popular thoroughfare. Le Corbusier's associate on the project was Josep Luis Sert, successor to Gropius as chairman of the architecture department. In 1963, Sert remarked that "a university campus is a laboratory for urban design."[70] He soon demonstrated this opinion in two projects located apart from Harvard's main quadrangle, where town and campus intermingled. Peabody Terrace (1964), married student housing, consists of three skyscrapers located along the Charles River. Holyoke Center (1965) hardly seems part of the University and provides a mixture of services in the midst of a busy shopping district.

According to the architectural histories that have begun to chronicle postmodernism, one of the most successful attempts to create a "student friendly" modern campus took place at the University of California at Santa Cruz, beginning in 1963. The master plan was designed by John Carl Warnecke & Associates, Anshen & Allen, Theodore C. Bernardi, and Ernest J. Kump. Their innovative design divided the

university population into separate residential colleges, which included spaces for living, studying and attending classes.[71] The wooded site allowed colleges to seem isolated from one another, even though they were within walking distance of central libraries and other shared facilities. Automobile traffic was generally relegated to the periphery of the campus, leaving pedestrian paths to become the primary means of transportation and eliminating the need for parking lots. The Santa Cruz colleges demonstrated how inexpensive materials and "familiar materials and forms provide…roots, a sense of security."[72] This attitude is especially refreshing in the context of the emerging forms of Brutalist architecture, such as massive concrete student centers and multi-use facilities that can overwhelm and homogenize a campus. The Santa Cruz college experiment has already stood the test of time; it is the only example of 1960s college architecture consistently discussed in architectural histories.

By its very nature, the college campus demands unification—of plan and general building type. Before a new building is erected on a college campus, it must undergo rigid scrutiny by trustees, faculty and other advisors. Such demanding patrons contribute to the high quality of modern architecture on college campuses. The most effective campus plans keep their growth in check, develop an intimate, pedestrian center and integrate an effective means of handling automobile traffic. When Yale decided to allow modern architecture, it did not destroy a tradition of fine Collegiate Gothic or damage its academic reputation. In fact, Yale demonstrated a healthy attitude towards growth and progress, allowing for new buildings that might contribute to a fabric that now includes "historic" modernism. As Paul Venable Turner has pointed out, a dramatic change took place in campus planning during the 1950s and 1960s, when modernism became an

acceptable style. Suddenly buildings were allowed to stand alone, express a unique personality, even obscure an otherwise clear pattern of development. The postwar American university, "an institution complex, dynamic, and unpredictable," reflected a cultural change from which there would be no turning back.[73]

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The following modern college campuses and campus buildings are listed as National Historic Landmarks:

Billings Student Center, University of Vermont, Vermont
Sever Hall, Harvard University, Massachusetts
Low Memorial Library, Columbia University, New York
Illinois Institute of Technology, Illinois
University of Virginia, rotunda and lawn, Virginia

The following modern college campuses and campus buildings potentially meet criteria for NHL designation:

Stanford Quad, Stanford University, Palo Alto, California (Shepley Rutan and Coolidge, 1888)
Blair Hall, Princeton University, Princeton, New Jersey (Cope and Stewardson, 1897)
Harkness Memorial Quadrangle, Yale University, New Haven, Connecticut (James Gamble Rogers, 1917)
Florida Southern College campus, Lakeland, Florida (Frank Lloyd Wright, 1936-59)
Baker House Dormitory, MIT, Cambridge, Massachusetts (Alvar Aalto, 1948)
Dexter M. Ferry Cooperative House, Vassar College, Poughkeepsie, New York (Marcel Breuer, 1950)
Graduate Center, Harvard University, Cambridge (Walter Gropius, 1950)
Yale University Art Gallery, Yale University (Louis Kahn, 1951-54)
Art and Science Building, St. John's College, Annapolis, Maryland (Richard Neutra & Robert Alexander, 1958)
David S. Ingalls Hockey Rink, Yale University (Eero Saarinen, 1958)
United States Air Force Academy campus, Colorado Springs, Colorado (SOM, 1958-62)
Ezra Stiles and Morse Colleges, Yale University (Eero Saarinen & Dan Kiley, 1960-62)
Art and Architecture Building, Yale University (Paul Rudolph, 1961-63)
Beinecke Rare Book Library, Yale University (SOM, 1964)
Kline Science Center, Yale University, (Philip Johnson, 1964)
A. N. Richards Medical Research Building and Biology Laboratory, University of Pennsylvania, Philadelphia (Louis Kahn, 1957-1964)
Carpenter Center for the Visual Arts, Harvard University (Le Corbusier (1962)
University of California at Santa Cruz, campus, California (John Carl Warnecke, et al., 1963-1970s)

MODERN ART MUSEUMS

The design of art museums posed a special challenge for modern architects. Not only were these monumental civic buildings, but their contents were part of history and its preservation. Much of the philosophy of early modernism—liberation from the past, the development of new buildings for modern technology and emerging lifestyles—was not applicable. It is not surprising that the major museums of the 1920s and early 30s remained architecturally conservative, most often neoclassical. The Museum of Modern Art (1939), the country's first public International Style building, marked a turning point in modernist design. In this high profile New York City commission, Philip Goodwin and Edward Durrell Stone departed from the formal Beaux-Arts arrangement to create an informal, flexible exhibition space. Modern architects of the post-World War II period strove to design buildings that suggested the significance of historical museum collections without adhering to any style of the past. By the 1950s and 60s, architects such as Philip Johnson and Frank Lloyd Wright were attempting to reintroduce architectural tradition to museum design in an unmistakably modernist fashion. Unlike their predecessors, modern architects faced the challenge of designing museum additions—new galleries and entire wings—for Beaux-Arts buildings of previous generations. The tension between addressing historical origins and offering something new and "unfettered" is perhaps best illustrated by museum additions.

Art museums required significant patronage for construction, not to mention a sizeable collection of art. In America, the art museum is a modern building type, but its architecture remained conservative until well into the twentieth century. The first public art museum is thought to have been designed for the Philadelphia Academy of Fine Arts

in 1806 and was originally intended to house a collection of plaster casts. A mixture of a native Federal style (including an eagle over the entrance) and bits of Palladian detailing, the building was lost to fire in 1845. Even by that date, only two other art museums had been constructed, the Greek Revival Trumbull Gallery at Yale College (1831-32), designed by Colonel John Trumbull, and the Wadsworth Athenaeum in Hartford by the firm of Alexander Jackson Davis and Ithiel Town. The Wadsworth Athenaeum, which currently promotes itself as the country's first art museum, can justifiably claim to be the first such building designed by professional architects. In its playful use of Tudor details in the Gothic Revival style, the Athenaeum contrasted with the Grecian Revival buildings of the day and "pointed museum architecture toward a new stylistic freedom."[74]

The work of James Renwick, Jr., illustrates the eclectic nature of design during the second half of the nineteenth century. Renwick created the Smithsonian Institution (1846-55) in what was considered a Neo-Romanesque style and began the Renwick Gallery (also in Washington, D.C.), an early example of Second Empire in 1859. During this time, architecture was chosen for its "associations," and styles were deliberately selected for their history. Frank Furness's first nationally significant building, the Pennsylvania Academy of Fine Arts (1876), is a spectacular example of this fanciful combination of architectural influences.[75] Professor James F. O'Gorman has traced the sources of Furness's inspiration to the Englishman Owen Jones, who designed ornament from nature, and the French theorist Eugene-Emmanuel Viollet-le-Duc's "stylistically eclectic iron architecture." If Furness's Academy was a mixture of styles in the eclectic tradition of his day, it also experimented with original ornamental forms and contained

what O'Gorman calls "one of the most impressive spaces in American architecture of any period."[76]

After 1893, when the World's Columbian Exposition popularized Beaux-Arts classicism, art museums in America were primarily based on early nineteenth-century schemes by the Frenchman J. N. L. Durand and the famous Altes Museum (1823-30) in Berlin by Karl Friedrich Schinkel. The basic floor plan was arranged on an axis, often a reception gallery leading to a central staircase and nave, all of which was surrounded by symmetrical exhibition galleries or courtyards. This format could be altered by adding or subtracting additional galleries or other spaces. On the exterior, the new museums were formal, and obviously considered civic achievements, but were modeled after Greek temples, Roman basilicas and Renaissance palaces. Richard Morris Hunt designed the quintessential example of the Beaux-Arts museum in America, the Metropolitan Museum of Art in New York, completed in 1902. Hunt was the first American to study at the Ecole, and his design for the Metropolitan Museum of Art in New York is reminiscent of Parisian civic monuments. The original design included grand wings enclosing courtyards on either side of a main entrance pavilion, but only the central section was completed before the architect's death. In 1906 McKim, Mead and White created the wings still fronting Fifth Avenue.

The earliest major museum to illustrate the new Beaux-Arts civic monumentality was Ernest Flagg's Corcoran Gallery (1893-95) in Washington, D.C. With its "Georgia-marble walls rising resplendently above a granite base, its Grecian details extremely refined, its massing horizontal and stately…it established a standard for museum architecture.…"[77] A few years later, the Albright-Knox Art Gallery in Buffalo, New

York, displayed a purer form of Greek-inspired architecture, the first "acropolis type" museum in the United States. The famous sculptor Augustus Saint-Gaudens designed the caryatids adorning the building. The Albright-Knox Gallery introduced another frequently imitated floor plan—a central entrance space serving as a gallery with exhibition areas all on one level. Over the next several decades, the plans of these prototypes would be imitated and combined throughout the country, at the Cleveland Museum of Art, the Detroit Institute of Arts, the National Gallery of Art in Washington, D.C., and the Museum of Fine Arts in Boston.

Beaux-Arts design and planning was at its height in the early twentieth century, when the City Beautiful Movement promised to add grandeur to the urban centers of cities across the country. In Philadelphia, an ambitious scheme centered around the Benjamin Franklin Parkway, which was lined with civic monuments, culminating in the Philadelphia Museum of Art (1928). The museum known as "the Philadelphia Acropolis" is one of the largest Greek temple-style buildings in the world. Although the Philadelphia Museum of Art stands out for its sheer bulk and fine workmanship, it is a traditional building situated in a typical Beaux-Arts manner. At the height of City Beautiful planning in the 1920s, the Art Moderne or Art Deco style became popular in America, and paved the way for even more dramatic change to come. Despite its similar classical origins, the Museum of Fine Arts (1931-33) in Springfield, Massachusetts, by Edward L. Tilton and Alfred Morton Githens is a humble building that hardly compares to the magisterial Philadelphia museum. From a distance, this small, unassuming building appears unabashedly modern, with its smooth exterior walls and carved medallion ornaments. The building uses elements of classical vocabulary, but

there are no columns or colonnades. The plan is essentially an elongated rectangle with a central lobby and stairwell around which offices and galleries are organized on two floors. It is a simple, elegant plan executed in a version of modernism that does not seem to have aged.[78]

It is not surprising that the first major art museum in the modernist style was the Museum of Modern Art in New York, completed in 1939 just seven years after its director coined the term "International Style" to describe the exhibit of new modern architecture curated by Henry Russell Hitchcock and Philip Johnson. The building by Edward Durrell Stone and Philip Goodwin was not only the first art museum to feature a modern façade, but also the first to represent a new philosophy toward art and its appreciation. The traditional elitism associated with viewing art was removed along with the ornamentation and symbols of its power. Visitors gained access through a modest, street-level entry; the early galleries were "a series of neutral, low-ceilinged spaces similar in scale to a comfortable living room."[79] The Museum of Modern Art successfully conveyed a new set of values, an achievement more often true of European modernist architecture.

If MOMA paved the way for a reconceptualization of the art museum and its social function, it did not diminish the power of "traditional" architecture. In fact, one of the most famous and widely appreciated museums of the day, the National Gallery of Art in Washington, D.C., was completed just two years later. Designed by John Russell Pope, the building is a celebration of neoclassical architecture, a true Beaux-Arts palace. With its grand stairway and formal rotundas and galleries, the National Gallery could not be a more typical museum. It is also typical that the country could embrace modernism

in New York City, but desire a more familiar symbol of its prominence in the nation's capitol. Over the next two decades, Americans would come to accept modernism as worthy of their past. In the meantime, the National Gallery of Art was as modern, in its way, as MOMA and an important landmark in museum design.

By the 1950s, modern architecture had come into its own, and architects who had grown up with modernism were experimenting with new methods of expression. Whereas MOMA made a point of removing ornamentation and the architect's presence from the visitor's experience, the Yale University Art Gallery addition (1953) by Louis Kahn explicitly exposed architectural elements and attempted to suggest a mood. One could say it was full of the modern, stripped down style. Kahn's building illustrated an important characteristic of modern architecture—the display of new materials and technology as "ornamentation." But while many of his contemporaries and imitators merely exposed such innovations, Kahn was able to use modern advances to express emotion. Patrons were certainly moved by Kahn's building, the first of what would become a modernist tradition on the Yale campus.[80]

Ten years before Kahn's Yale Art Gallery, Frank Lloyd Wright conceived of the Guggenheim Museum in New York City, a building like none other. The museum is not only entirely abstract, but designed around a unique form, a spiraling pathway, that caused art to be viewed in a new way. During the design phase, patrons feared that the building would become a modernist spectacle and draw attention away from the art collection. Wright had every intension of diminishing the barrier between art and viewer, that is, of democratizing the museum experience. The pictures were hung close to ground-level without frames or glass on a tilted, outward curving wall in an effort to free

them from the traditional setting. Despite Wright's effort to focus on the artwork, the building does become a focal point; the spiraling ramp literally controls the movement of visitors. Planning and executing the museum extended into the 1950s. The Guggenheim is an important example of Wright's mature work (he died in 1959, the year of its completion), his desire to create a building expressing the sculptural power of concrete, and the evolution of his obsession with spirals and circular forms. Perhaps most significant, the Guggenheim is an unprecedented example of the role modern architecture might take in altering the museum experience.

A year before the birth of the Guggenhiem concept, in 1942, Ludwig Mies van der Rohe designed his "Museum for a Small City," a project reducing architecture to nothing more than a container for art. Stripped of all historical and symbolic association, the museum space was merely a solid floor and ceiling with walls of glass. Mies's work clearly influenced Philip Johnson's architectural career, but at least one scholar has argued that a comparison between Mies's Cullian Hall (1958) and Johnson's Proctor Institute (1960) demonstrates their inherent differences. Mies took on a pioneering role of eliminating "the barrier between the work of art and the living community" in his design for Cullinan Hall (1958) at the Museum of Fine Arts in Houston, Texas.[81] The barrier was lessened by an open plan, improvements in lighting, and better methods of installing and displaying art—all characteristics of the new Museum of Modern Art which would become commonplace in modernist museums. Helen Searing notes that Cullinan Hall is a "perfected version" of Mies's small city museum project, which the architect described as "allowing complete flexibility" for the collection in a space that was "defining rather

than confining."[82] Mies approached the museum with the goal of freeing the collection from its boundaries and the building from its own structure.

Before Philip Johnson designed the Proctor Institute, his critique of Mies's museum ideas, he served as director of MOMA's Department of Architecture and Design. During his tenure as director, Johnson published a monograph on Mies and designed MOMA's annex, which was followed a few years later by a sculpture court. His first free-standing museum, the Munson-Williams-Proctor Institute in Utica, New York (1960), resembles Cullinan Hall in its austerity and prominent exterior girders. But whereas Mies's building emphasizes traditional modernist themes, such as the continuation of interior and exterior space and a feeling of lateral movement reminiscent of his famous Barcelona Pavilion (1929), Johnson's museum is considered "fundamentally traditional and classicizing." As visitors enter the Proctor Institute they notice the low space leading into the gallery, one of many indications of the separation between interior and exterior. According to John Jacobus, "Johnson's museum is a notable landmark in the development of American architecture in the late 1950's, reflecting a deep-rooted urge to re-establish sensible contact with those elements of the pre-modern architectural tradition—the very elements that had been rejected by the first two generations of twentieth-century architects as a consequence of new concepts of space and form."[83] Inside the Proctor Institute, Jacobus points out the resemblance between the double-height central gallery, with its highly crafted balustrades on the stair, and Germanic Romantic Classicism. In terms of such classical references, the Proctor Institute has more in common with Wright's Guggenheim Museum, which also uses

forms that might be considered Baroque, personal, and historical in a sense that was foreign to modern architecture of Mies's generation.

Within the three years from 1960 to 1963, Johnson designed three important art museums and an addition—the Proctor Institute, the Amon Carter Museum of Western Art in Fort Worth, Texas (1961); the Sheldon Art Gallery for the University of Nebraska at Lincoln (1962-3); and a wing at Dumbarton Oaks for the R.W. Bliss Collection of Pre-Columbian Art. At a time when many architects were looking for the style after modernism, Johnson became a champion of what would come to be called the new Formalism. Taken as a group, which is most useful, Johnson's museums show his departure from the Miesian model, with its focus on form, to buildings that are more concerned with the actual enclosed spaces, the transition from inside to outside, and progression through the building. At the Amon Carter Museum, for example, a series of exterior terraces climb a gentle slope up to the entrance, a sequence that is mirrored in the tiered floors of the building as well. The Sheldon Art Gallery at the University of Nebraska is an exercise in the modernization of classical forms; the limestone façade features a low plinth and cornice line suggesting an ancient temple. Johnson uses columns, pilasters, an arched entrance, and a formal stairway and even covers modern materials with Italian marble. Such a blatant display of classical vocabulary, however modernized, contrasts sharply with the antihistorical modernism of the preceding generation. The wing for the R. W. Bliss Collection of Pre-Columbian Art (1963) is a sculpture in itself: eight circular glass pavilions form a series of interconnected insular spaces. The wing relates more to exterior formal gardens and terraces than Dumbarton Oakes, a Georgian style house designed in 1801.

While Johnson and his followers formalized or historicized modernism and Venturi began to look towards Postmodernism, Marcel Breuer continued to offer fresh interpretations of what his contemporaries might consider traditional modernism. A new version of modern architecture called Brutalism (from the French "beton brut") explored the qualities of roughly finished concrete to produce new sculptural forms. Like the Guggenheim, the Whitney Museum of Art (1964-66) by Marcel Breuer and Hamilton Smith demonstrates the qualities of concrete in a building that is also a monument. But unlike Wright's museum, the Whitney is aggressive in its monumentality; the dark grey granite walls seem to challenge visitors to enter. The building turns traditional building techniques upside-down, as it sits on a small based with progressively larger floors looming above. All the tricks of modernism are here: changes in ceiling height, experimentation with materials, unusual window shapes, a sunken sculpture garden. The interior is organized by an open grid ceiling that allows for partitions and contains artificial lighting. As the name Brutalism suggests, the style brings with it both foreboding connotations and heroic stature. Although Breuer and others would prove that groups of "brutal" buildings can become oppressive, the Whitney is admirably suited to its New York City location and purpose. It is one of the Breuer and Smith's most effective and significant buildings.

By the 1960s modern architecture was a given, but architects struggled with modernism as a style, a struggle that resulted in Formalism, Brutalism, Postmodernism and other efforts to come to terms with contemporary design . The Kimball Art Museum (1967-72) in Fort Worth, Texas, by Louis Kahn managed to elude all classification. According to critic Paul Goldberger, the building "has become probably the most revered

museum design of the second half of the twentieth century."[84] The museum's simple plan consists of a series of concrete vaults, some of which house galleries and others garden courts, entrance areas and a reflecting pool. Although the row of concrete vaults hardly appears spectacular on the outside, visitors are surprised to find a variety of interior spaces. Even more surprising is the luminous source of natural light: skylights in the vaults are expertly filtered to obtain the effects of natural lighting without damaging the artwork. A visit to the Kimball is frequently described as mystical, and it is Kahn's use of light, as well as his choice of fine materials, such as oak, travertine and stainless steel, that create such a moving experience for visitors. In the 1980s, a potential expansion plan was dismissed when museum patrons protested any change in what many consider to be a perfect building. The Kimball Art Museum is one of a handful of modern buildings from the early 1970s that has already been judged worthy of preservation.[85]

As a building type, the modern American art museum inspired its designers to strive for social transformation. According to Neil Levine, Wright's Guggenheim Museum "can almost surely be said to have initiated the popular postwar idea that the art museum would be the ideal instrument for bringing together people of differing classes, races and political persuasions."[86] In fact, the hope for this type of "democratic" viewing of art dated back to the founding of the Museum of Modern Art in the 1930s. The modern American art museum was intended to bring art to the people, and in that way it came closer than any other building type to imitating the original goals of International Style architecture.

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Jacobus, John M. Jr. *Philip Johnson*. New York: George Braziller, Inc., 1962.

Jones, Peter Blundell. *Modern Architecture Through Case Studies*. Oxford: Architectural Press, 2002.

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Stephens, Suzanne. *Building the New Museum*. New York: Princeton Architectural Press, 1986.

The following modern public institutions and research facilities are listed as National Historic Landmarks:

Pennsylvania Academy of Fine Arts, Philadelphia
Renwick Gallery, Washington, D.C.
Smithsonian Institution, Washington, D.C.
Corcoran Gallery, Washington, D.C.
Metropolitan Museum of Art, New York

The following modern museums and libraries potentially meet criteria for NHL designations:

Philadelphia Museum of Art, Pennsylvania, (Borie, Trumbauer & Zantzinger, 1928)
Albright-Knox Art Gallery, Buffalo, New York (Edward B. Green, 1900-5); Addition, Buffalo, New York (SOM, 1962)
Museum of Fine Arts, Springfield, Massachusetts (Edward L. Tilton and Alfred Morton Githens, 1931-33)
Museum of Modern Art, New York (Philip Goodwin and Edward Durrell Stone, 1939; Addition, Philip Johnson, 1964)

National Gallery of Art (West Building), Washington, D.C. (John Russell Pope, 1941)
Yale University Art Gallery, New Haven, Connecticut (Louis Kahn, 1951-54)
Guggenheim Museum, New York (Frank Lloyd Wright, 1956-59)
Museum of Fine Arts, Cullinan Hall, Houston, Texas (Mies, 1958)
Munson-Williams-Proctor Institute, Utica, New York (Philip Johnson, 1960)
Amon Carter Museum of Western Art, Fort Worth, Texas (Philip Johnson, 1961)
Sheldon Memorial Art Gallery, University of Nebraska (Philip Johnson, 1963)
Whitney Museum of American Art, New York, (Marcel Breuer and Hamilton Smith, 1966)
Kimball Art Museum, Texas (Louis Kahn, 1967-72)

EXCEPTIONAL MODERN ARCHITECTS ("A" LIST)

Alvar Aalto (1898-1976)

Although the Finnish architect Alvar Aalto only designed two buildings in the United States, his practice influenced the growth and direction of the modern movement worldwide. Aalto's work was introduced in this country in 1938, when his Finnish pavilion at the New York World's Fair won first prize, and John McAndrew exhibited his work at the Museum of Modern Art. As a designer, Aalto created a widely copied three-legged stacking stool and introduced molded plywood. His skill with wood contributed to his treatment of building materials, and his reputation for a sensitive interpretation of International Style architecture. Aalto was awarded the Royal Gold Medal from the Royal Institute of British Architects (R.I.B.A.) in 1957 and the American Institute of Architects (A.I.A.) Gold Medal in 1963.

Selected Works in America:

Baker House Dormitory, Massachusetts Institute of Technology, Cambridge, Massachusetts, 1948 (Perry, Shaw, and Hepburn, associated)
Woodberry Poetry Room, Lamont Library, Harvard University, Cambridge, Massachusetts, 1949
Mount Angel Benedictine College Library, St. Benedict, Oregon, 1970

Sources: Gutheim, Frederick. *Alvar Aalto*. New York/London, 1960; Groak, Steven, et al., *Alvar Aalto, Architectural Monographs 4*. London, 1978; Quantrill, Malcolm. *Alvar Aalto: A Critical Study*. London, 1983; Schildt, Goran. *Alvar Aalto: The Mature Years*. New York, 1991.

Marcel Breuer (1902-1981)

A student at Walter Gropius' Bauhaus during the 1920s, Marcel Lajos Breuer made his reputation as a designer of tubular steel furniture. When he followed his mentor to the United States in 1937, Breuer entered into partnership with Gropius and became an associate professor at Harvard's School of Design from 1937 to 1946. For the next thirty years, he produced prototypical residential designs, groundbreaking work in prefabrication, and significant improvements in concrete technology from his office in New York. One biographer has noted that "no other modern architect's work has remained as valid visually and technically for sixty years and more." Breuer received the A.I.A. Gold Medal in 1968.

Selected Works in America:

Wheaton College Art Center, Norton, Massachusetts, 1938 (with Walter Gropius)
Breuer House 1, Lincoln, Massachusetts, 1939
"Butterfly" exhibition house, Museum of Modern Art, New York, 1949
Co-operative Dormitory, Vassar College, Poughkeepsie, New York, 1950
Breuer House (Epstein House), New Canaan, Connecticut, 1951
Arts Center, Sarah Lawrence College, Bronxville, New York, 1952

Starkey House, Duluth, Minnesota, 1958 (Herbert Beckhard, Associate)
Hunter College Library, New York, 1959 (with R. F. Gatje)
Hooper House, Baltimore, Maryland, 1960 (Herbert Beckhard, Associate)
United States Department of Housing and Urban Development Headquarters, Washington, D.C., 1963-1968 (with Herbert Beckhard; Nolen/Swinburne)
St. Francis de Sales Church, Muskegon, Michigan, 1966 (with Herbert Beckhard)
Whitney Museum of American Art, New York, 1966 (with Hamilton Smith)
Becton Center for Engineering & Applied Science, Yale University, New Haven, Connecticut, 1970 (with Hamilton Smith)
Hubert W. Humphrey Building, Washington D.C., 1976 (with Herbert Beckhard; Nolen/Swinburne)

Sources: Blake, Peter. *Marcel Breuer: Architect and Designer*. New York: Architectural Record/The Museum of Modern Art, 1949; Hitchcock, Henry-Russell. *Marcel Breuer and the American Tradition in Architecture*. Cambridge, Massachusetts, 1938; Jones, Cranston. *Marcel Breuer 1921-1962*. London, 1962; Papachristou, Tician. *Marcel Breuer: New Buildings and Projects*. New York, 1970.

Richard Buckminster Fuller (1895-1983)

Buckminster Fuller didn't consider himself an architect, but his work in design and engineering went to the heart of modern architecture. The mass-produced, prefabricated dymaxion house and geodesic dome provided less expensive, more resource conscious models for post-war housing. Fuller's work made use of new materials--his own "fibrous building block" for lightweight building--and dome frames employing plywood, aluminum and prestressed concrete. Over 300,000 geodesic domes were built around the world, helping to solve the housing crisis in areas where skilled labor and other resources were scarce. Along with his inventions, which included patents for a rowing device and floating breakwater, Fuller left behind a philosophy of building and conservation far ahead of its time. In 1970, Fuller received the A.I.A. Gold Medal.

Selected Works:
Dymaxion House, Dearborn, Michigan, 1947
United States Pavilion, Sokolniki Park, Moscow, 1959
Union Tank Car Dome, Baton Rouge, Louisiana, 1958
United States Pavilion, Expo '67, Montreal Canada, 1967
Religious Center, Southern Illinois University, Edwardsville, IL, 1971 (Fuller & Sadao)
United States Research Station, Antarctica, 1972

Sources: Marks, Robert W. *The Dymaxion World of Buckminster Fuller*. New York, 1960; McHale, John. *R. Buckminster Fuller*. New York, 1962; Pawley, Martin, *Buckminster* Fuller. London, 1990; Robertson, Donald W. *The Mind's Eye of Richard Buckminster Fuller*, New York, 1983; Rosen, Sidney, *Wizard of the Dome--R. Buckminster Fuller, Designer for the Future*, Boston, 1969.

Walter Gropius (1883-1969)

The German-born architect Walter Gropius is as famous for his philosophy as his buildings. Gropius directed the Bauhaus, the most important school for modern architects and designers in the world, and, after emigrating to America in 1937, influenced a generation of American architects as head of the architectural department at Harvard University. During an era in which other leading architects professed their individual genius, Gropius taught the value of collaboration, and he practiced what he preached. His Cambridge firm, The Architects Collaborative (TAC: Jean Bodman-Fletcher, Norman C. Fletcher, John C. Harkness, Sarah Harkness, Robert S. McMillan, Louis A. McMillan, and Benjamin Thompson), shared the responsibility for all work. Although Gropius' buildings in the United States hardly compared to his revolutionary minimal housing designs of the 1920s in Germany, his philosophy of teamwork and emphasis on the relationships between the design arts was of inestimable value to the modern movement. Gropius received the Gold Medal from the A.I.A. in 1959.

Selected Works in America:

Gropius House, Lincoln, Massachusetts, 1937 (with Marcel Breuer, NHL)
J. Ford House, Lincoln, Massachusetts, 1938 (with Breuer)
Chamberlain House, Sudbury, Massachusetts, 1939 (with Breuer)
Frank House, Pittsburgh, Pennsylvania, 1939 (with Breuer)
Aluminum City Terrace, New Kensington, Pennsylvania, 1940 (with Breuer)
Black Mountain College, North Carolina, town planning, 1946 (with Breuer)
Graduate Center, Harvard University, Cambridge, Massachusetts, 1949-1950 (Architects Collaborative)
General Panel House, Los Angeles, California, 1950 (with Konrad Wachsmann)
Back Bay Center, Boston, 1953 (with Pietro Belluschi, Carl Koch, Hugh Stubbins and Walter Bogner)
Pan American Building, New York, 1958 (as consultant architect with Pietro Belluschi)
Parkside Elementary School, Columbus, Indiana, 1960 (Architects Collaborative)
Kennedy Federal Building, Civic Center, Boston, 1968

Sources: Fitch, James Marston. *Walter Gropius*. New York, 1960; Giedion, Sigfried. *Walter Gropius*. Paris, 1931; Isaacs, Reginald. *Gropius: An Illustrated Biography of the Creator of the Bauhaus*. Boston, 1991; Nerdinger, Winifred, ed. *The Walter Gropius Archive: An Illustrated Catalogue of the Drawings, Prints and Photographs in the Walter Gropius Archive at the Busch-Reisinger Museum, Harvard University*. New York, 1990.

Philip Johnson (1906-

Philip Johnson is not only an important modern architect, but a critic who helped to shape the history of the modern movement in America. As the first director of the architectural department of the Museum of Modern Art in New York, Johnson collaborated with Henry-Russell Hitchcock on the 1932 exhibition, "The International Style." He invited Mies van der Rohe and Le Corbusier to visit the United States for the first time, hired Mies to design his apartment in 1930, and wrote an important monograph on Mies published in 1947. An independently wealthy critic, Johnson brought the modern movement to America as an architectural style, without the social ramifications of its European origins. Johnson's design career gained momentum in 1949, when he built a glass house (Johnson House) in New Canaan, Connecticut, and showed the world what modern architecture could do to the domestic realm. In 1958, Johnson collaborated with Mies and Kahn and Jacobs on the Seagram Building, Park Avenue, New York, and in 1964, with Richard Foster on the New York State Theater, Lincoln Center. Although historians praise Johnson most highly for his work of this time (his "Miesian" period), he remains a lively presence in the architectural world of 2002. Johnson received the A.I.A. Gold Medal in 1978.

Selected Works:

Philip Johnson House (Glass House), New Canaan, Connecticut, 1949 (NHL)
Hodgson House, New Canaan, 1951 (1956*) (Landis Gores, associated)
Schlumberger Administration Building, Ridgefield, Connecticut, 1952*
Leonhardt House, Lloyd's Neck, Long Island, New York, 1956
Roofless Church, New Harmony, Indiana, 1960 (1961*)
Museum for Pre-Columbian Art, Washington, D.C., 1963
Sheldon Memorial Art Gallery, University of Nebraska, Lincoln, 1963
Kline Science Center, Yale University, New Haven, Connecticut, 1964 (with Richard Foster)
Museum of Modern Art, East and Garden Wings, New York, 1964
New York State Theater, Lincoln Center, New York, 1964 (with Foster)
Boston Public Library, addition, 1973 (with Architects Design Group)

Sources: Hitchcock, Henry-Russell. *Philip Johnson: Architecture 1949-1965*, New York/London, 1966; Jacobus, John, Jr., *Philip Johnson*. New York, 1962; Noble, Charles. *Philip Johnson*. Tokyo, 1968.

Louis Kahn (1901-1974)

The work of Louis Kahn lifted the spirits of the American architectural community during the 1950s and 60s, when the modern movement began to lose its missionary force and architects struggled to find a direction. In fact, a journalist named Jan Rowan coined the term Philadelphia School for a group of young architects loosely following Kahn's leadership (Mitchell/Giurgola, Robert Geddes, Robert Venturi and others). A professor at Yale and the University of Pennsylvania, mentor and philosopher, Kahn was one of the few architects of his day who was able to breath life into "functional" buildings. In his words, he discovered "what the building wanted to be" and expressed that essence in a modern idiom. Biographical accounts of Kahn emphasize both the human aspect of his

buildings and the architect's ability to teach and inspire. He received the A.I.A. Gold Medal in 1971 and the Royal Gold Medal, R.I.B.A. in 1972.

Selected Works:

Yale University Art Gallery, New Haven, Connecticut, 1953
Richards Laboratories, University of Pennsylvania, Philadelphia, 1964
Jewish Community Center Bath House, Ewing, New Jersey, 1955
Jonas Salk Institute for Biological Studies, La Jolla, California, 1965
Erdman Hall Dormitories, Bryn Mawr College, Pennsylvania, 1965
First Unitarian Church, Rochester, New York, 1967
Phillips Exeter Academy, Library and Dining Hall, New Hampshire, 1972
Kimbell Art Museum, Fort Worth, Texas, 1972

Sources: Brownlee, David B. and David G. Delong. *Louis I. Kahn: In the Realm of Architecture*. New York, 1991; Romaldo Giurgola and Jaimini Mehta. *Louis I. Kahn*. Zurich/Boulder, Colorado, 1975; Heinz Ronner, Sharad Jhaveri and Alessandro Vesella, *Louis I. Kahn: The Complete Works 1935-1974*. Basle/Stuttgart/Boulder, Colorado, 1977; Scully, Vincent, Jr. *Louis I. Kahn*. New York, 1962.

Le Corbusier (Charles-Edouard Jeanneret, 1887-1965)

No single architect did more to create and popularize the philosophy of International Style architecture than Le Corbusier. Despite the fact that he only designed one building in the United States, Le Corbusier was the major force in promoting the modern movement in America, spreading his architectural philosophy in *Towards a New Architecture* (1923), *The City of Tomorrow* (1924) and *The Decorative Art of Today* (1925), the first two of which were translated by 1931. Le Corbusier's books are still an important part of the curriculum of American design schools. His engaging texts were the first to compare the art of building with modern technological achievements, such as grain elevators and ocean liners, and his idea of the house as a "machine for living in" became a widely quoted (and often misunderstood) catch-phrase of modernism. Le Corbusier received the Gold Medal, R.I.B.A., in 1959.

Work in America:
Carpenter Center for the Visual Arts, Harvard University, Cambridge, Massachusetts, 1961-1964.

Sources: Baker, Geoffrey, and Jacques Gubler. *Le Corbusier: Early Works by Charles-Edouard Jeanneret*. London, 1987; Jencks, Charles. *Le Corbusier and the Tragic View of Architecture*. Cambridge, Massachusetts, 1973; Jordan, Robert Fumeaux. *Le Corbusier*. New York, 1972.

Ludwig Mies van der Rohe (1886-1969)

Ludwig Mies van der Rohe emigrated to the United States in 1938 and ten years later, found the solution to the struggle for a functional, aesthetically pure tall building, designing the prototype of the modern steel and glass skyscraper. Most of Mies work in Germany remained unbuilt, but his pavilion for the Barcelona International Exposition (1928-1929) remains a classic of modern architecture. As director of the School of Architecture at the Armour Institute of Technology in Chicago, Mies designed a master plan for the campus and its major buildings from 1941-1958. His most widely recognized early skyscrapers--860 Lakeshore Drive, Chicago, and the Seagram Building, New York--are famous for allowing the steel frame to ornament the curtain wall. Mies' basic skyscraper recipe was simple, in essence they were "steel and glass slabs," but his meticulous attention to proportion and materials set his work apart. The influence of Mies' skyscraper prototype can be seen in every American city, although few imitations compare to the originals. Mies received the Royal Gold Medal, R.I.B.A. in 1959 and the A.I.A. Gold Medal in 1960.

Selected Work in America:

Illinois Institute of Technology, preliminary and revised master plans, Chicago, 1939-1941
Alumni Memorial Hall, Illinois Institute of Technology, 1945 (with Holabird and Root)
Chemistry Building, I.I.T., 1945 (with Friedman, Alschuler and Sincere)
Metallurgical Research Building, I.I.T., 1945 (with Holabird and Root)
860-880 Lakeshore Drive Apartments, Chicago, 1951 (with Pace Associates, and Holsman, Holsman, Klekamp and Taylor)
Farnsworth House, Plano, Illinois, 1950
Commonwealth Promenade Apartments, Chicago, 1956 (with Friedman, Alschuler and Sincere)
S. R. Crown Hall, School of Architecture and Design, Illinois Institute of Technology, Chicago, 1956 (with C.F. Murphy Associates)
Seagram Building, New York, 1958 (with Philip Johnson; Kahn and Jacobs)
Museum of Fine Arts, Cullinan Hall, Houston, Texas, 1959 (with Staub, Rather and Howze)
IBM, Chicago, 1967 (with C.F. Murphy Associates)

Sources: Achilles, Rolf, Kevin Harrington, and Charlotte Myhrum, eds. *Mies van der Rohe: Architect as Educator*. Chicago, 1986; Blaser, Werner. *Mies van der Rohe*. New York, 1965. Johnson, Philip. *Mies van der Rohe*. New York, 1947. Schulze, Franz. *Mies van der Rohe: A Critical Biography*. Chicago, 1985.

Richard Neutra (1892-1970)

Of all the European architects who immigrated to America, none is more identified with a region than Richard Neutra. Neutra followed his friend and fellow Viennese born architect Richard Schindler to America in 1923 and worked briefly in the office of Frank Lloyd Wright. Like Schindler, Neutra found his inspiration in the untested atmosphere of southern California and, along with Schindler and their followers, developed a regional

style that would come to define California domestic architecture. His Health House for Dr. Lovell is universally considered a landmark of the modern movement and International Style design, and his open plan schools in California created a new standard for school buildings, opening up the classroom to light and air. Throughout his career Neutra wrote and spoke about "biorealism" or the relationship between man and his environment. Neutra was awarded the A.I.A. Gold Medal posthumously in 1977.
Selected Works:

Lovell Health House, Los Angeles, 1929
Channel Heights Housing, San Pedro, California, 1942
Nesbitt House, Brentwood, Los Angeles,1942
Kaufmann Desert House, Palm Springs, California, 1947
Bailey Case Study House, Santa Monica, California, 1947 (1948*)
Tremaine House, Montecito, California, 1948
Northwestern Mutual Fire Insurance, Los Angeles,1951*
Hinds House, Los Angeles, 1951*
Business Education Building, Orange Coast College, Costa Mesa, California, 1953* (with Robert E. Alexander)
Moore House, Ojai, California, 1952 (1954*)
Eagle Rock Playground Club House, Los Angeles, 1953 (1954*)
Garden Grove Community Church, Garden Grove, California, 1961
Corona Avenue Elementary School, Los Angeles

Sources: Boesiger, Willy, ed. *Richard Neutra: Buildings and Projects*. vol. I. 1923-1950, Zurich, 1951; vol. II, 1950-1960, Zurich, 1959; vol. III. 1961-1966, Zurich/London/New York, 1966; Doumato, Lamia. *Richard Joseph Neutra: A Select Biography*. Monticello, Illinois, 1980. Hines, Thomas. *Richard Neutra and the Search for Modern Architecture*. New York/Oxford, England, 1982. McCoy, Ester. *Richard Neutra*. New York, 1960.

I. M. Pei (Ioh Ming 1917-)

A student at the Harvard Graduate School of Design during Gropius's tenure, I.M. Pei went on to become one of the country's most prolific architects, receiving major commissions throughout the United States for a variety of building types. Pei began his career working for the New York developer Webb and Knapp, and his design for the Mile High Center in Denver was an instant success. In 1955, Pei went into partnership with Henry Cobb and James Inigo Freed, forming I.M. Pei and Partners, New York. Over the next thirty years, the firm would design office buildings, the Kennedy Library in Boston, the Dallas Municipal Center and a series of superior art galleries including two extensions, one for the National Gallery in Washington D.C. and one to the Louvre. If Pei prefers to write little and philosophize less, the number and prestige of his buildings certainly speak for themselves. Pei received the A.I.A. Gold Medal in 1979.

Selected Works:

Mile High Center, Denver, 1955 (Kahn & Jacobs Associate Architects)*

Zeckendorf Plaza Development*
Kips Bay Plaza, New York, 1958
Society Hill Towers and Townhouses, Philadelphia, 1964
Massachusetts Institute of Technology, Green Center, Cambridge, 1964
Slayton Townhouse, Washington, D.C., 1964 (I.M. Pei & Associates, with Kellogg Wong)
National Center for Atmospheric Research, Boulder, Colorado, 1967
University Plaza, New York University, New York, 1967
Everson Museum of Art, Syracuse, New York, 1968
National Airlines Terminal, Kennedy Airport, New York, 1970
Cleo Rogers Memorial County Library, Columbus, Indiana, 1970
Hancock Tower, Boston, Massachusetts, 1973

Sources: Doumato, Lamia. I*eoh Ming Pei: A Bibliography*. Monticello, Illinois, 1986; Suner, Bruno. *Pei*. Paris, 1988; Wiseman, Carter. *The Architecture of I. M. Pei*. London, 1990.

Eero Saarinen (1910-1961)

Eero Saarinen began his design career with award-winning plywood chairs designed in collaboration with Charles Eames for the 1938 Museum of Modern Art Organic Design Furniture competition. He worked with his father during the late 1930s and 1940s, and the firm of Saarinen and Saarinen was well known in 1948, when Eero won the competition for the Jefferson National Expansion Memorial in St. Louis. Although the Memorial arch would not be completed until 1964, the highly publicized commission instantly established the architect's reputation. Over the next decade, Saarinen produced some of the country's boldest architectural forms for buildings that ranged from a tiny chapel at M.I.T. to a skating rink at Yale and an airport terminal at Dulles. Historians have found it difficult to characterize Saarinen's work--he has been called a "sculptural formalist--and it appears that he searched for direction throughout his career. Eero Saarinen received the Gold Medal of the American Institute of Architects posthumously in 1962.

Selected Works:
Chapel, Massachusetts Institute of Technology, Cambridge, Massachusetts, 1954
Kresge Auditorium, MIT, Cambridge, 1955
General Motors Technical Center, Warren, Michigan, 1956 (1953* and 1955*)
Irwin Union Bank & Trust, Columbus, Indiana, 1956
David S. Ingalls Skating Rink, Yale, New Haven, Connecticut, 1958
Concordia Senior College, Fort Wayne, Indiana, 1959*
United States Embassy Office Building, Oslo, Norway, 1960*
IBM Research Center, Yorktown Heights, New York, 1961
Bell Labs Research Center, Homdel, New Jersey, 1962
Stiles & Morse Colleges, Yale University, New Haven, Connecticut, 1962
Terminal Building, Dulles International Airport, Chantilly, Virginia, 1962
TWA Terminal, New York, New York, 1962

Deere & Company Headquarters, Moline, Illinois, 1963
Jefferson National Expansion Memorial Arch, St. Louis, Missouri, 1964
North Christian Church, Columbus, Indiana, 1964
Vivian Beaumont Allen Repertory Theater, Lincoln Center, New York, 1964
CBS Headquarters, New York, 1964

Sources: Saarinen, Aline B., ed. *Eero Saarinen on His Work.* New Haven and London, 1962; Spade, Rupert, *Eero Saarinen.* New York/London, 1971; Temko, Allan, *Eero Saarinen*. New York/London, 1962.

Eliel Saarinen (1873-1950)

When Eliel Saarinen won second prize in the Chicago Tribune competition of 1922, the history of modern architecture in America was forever altered. Saarinen's influential Tribune project was not built, but it was the catalyst for his immigration to the United States, where he became director of Cranbrook Academy of Art in Bloomfield Hills, Michigan. At Cranbrook, Saarinen worked to further his educational philosophies, creating an artist's community in which life and work were aesthetically unified. From his Cranbrook studio, Saarinen designed major urban plans, such as the Chicago and Detroit Lakefronts, but, because his schemes depended on "cellular units," which were segregated by function, much of his work was distorted by developers eager to instigate urban zoning. In America, Saarinen is best known for his deceptively simple designs of cultural institutions, such as the Kleinhaus Music Hall and Berkshire Music Center, both designed with his son, Eero. Eliel Saarinen received the A.I.A. Gold Medal in 1947.

Selected Works in America:
Kleinhans Music Hall, Buffalo, New York, 1940 (NHL)
Crow Island School, Winnetka, Illinois, 1939-1940 (with Eliel, Perkins, Wheeler &Will) (NHL)
Tabernacle Church, Columbus, Indiana, 1940
Opera Shed for Berkshire Music Center, Stockbridge, Massachusetts, 1947 (Saarinen, Swanson & Saarinen)
Christ Lutheran Church, Minneapolis, Minnesota, 1949-1950 (with Eero)
General Motors Technical Center, Detroit, Michigan, 1951 (Saarinen, Saarinen and Associates)

Sources: Christ-Janer, Albert, *Eliel Saarinen*. Chicago/London, Toronto, 1948; Doumato, Lamia. *Eliel Saarinen 1873-1950.* Monticello, Illinois, 1980, bibliography; Hausen, Marika, et al., *Eliel Saarinen: Projects 1896-1923.* Helsinki, 1990.

Skidmore, Owings and Merrill (SOM)

The firm of Skidmore, Owings and Merrill (SOM) produced modern architecture on a scale that foreshadows the output of 21st-century "design-build" firms. After collaborating on Chicago's *Century of Progress* exhibition, Louis Skidmore (1897-1962)

and Nathaniel Owings (1903-1984) opened a design office together, adding engineer John Merrill (1896-1975) to the partnership in 1939. From the beginning, the firm's founders valued teamwork. Unlike most contemporary architectural offices, SOM encouraged young designers by surrounding them with technical support; experts handled the construction details and supervised building. This system not only resulted in the retention of many successful designers, but also unusual productivity. Gordon Bunshaft designed Lever House, the New York office building that brought the firm world-wide fame upon its completion in 1952. During the 1950s, Bunshaft and SOM were responsible for most of New York's prestigious corporate buildings, such as the Manufacturers Hanover Trust Company, the Union Carbide Building and the Pepsi-Cola Building. By this time they had developed a reputation for office buildings in more rural settings, such as the Weyerhaeuser headquarters in Tacoma, Washington, and had offices in New York, Chicago, San Francisco and Portland. When architectural trends began to favor postmodernism in the 1980s, SOM's thirty-year reign as the powerhouse of corporate design came to an end. Louis Skidmore received the A.IA. Gold Medal in 1957, Nathaniel Owings in 1983.

Selected Works:

Illinois Children's Home & Aid Society, Chicago, Illinois, 1949
Garden Apartments, Oak Ridge, Tennessee, 1950
Lever House, New York, 1952 (Gordon Bunschaft, chief designer)*
Sawyer Biscuit Company Plant, Melrose Park, Illinois, 1953*
Service Schools, Great Lakes, Illinois (Naval Training Center Service Schools; Gunners' Mates Building; Fire Control Technicians Building), 1954*
U.S. Naval Postgraduate School, Monterey, California, 1955*
Manufacturers Hanover Trust Company, New York, 1954 (1956*)
Connecticut General Life Insurance Company, Bloomfield, Connecticut, 1958*
Inland Steel Building, Chicago, 1958
Wyeth Laboratories, Inc., Radnor, Pennsylvania, 1957*
Industrial Reactor Laboratories, Plainsborough, New Jersey, 1958*
Computer Center, Yale University, New Haven, Connecticut, 1961
Pepsi Cola World Headquarters, New York, 1959 (1961*)
Upjohn Company, Kalamazoo, Michigan, 1961
U.S. Air Force Academy Chapel, Colorado Springs, Colorado, 1962
Kitt Peak Observatory, Tucson, Arizona, 1962
Beinecke Library, Yale University, New Haven, Connecticut, 1963
Tenneco Building, Houston, Texas, 1963
Mauna Kea Beach Hotel, Kamuela, Hawaii, 1965
Alcoa Building, San Francisco, California, 1967

Sources: Bush-Brown, Albert, *Skidmore, Owings and Merrill Architecture and Urbanism, 1973-1983.* Stuttgart/New York 1984; Drexler, Arthur and A. Menges, *The Architecture of Skidmore, Owings and Merrill 1963-73.* Stuttgart/New York, 1974; Henry-Russell Hitchcock and Ernst Danz, *The Architecture of Skidmore, Owings and Merrill 1950-1962.* New York/Stuttgart 1962; Woodward, Christopher and Yukio Futagawa, *Skidmore, Owings and Merrill.* Tokyo, 1968.

Frank Lloyd Wright (1867-1959)

Of all the pioneers of modern architecture, Frank Lloyd Wright stands in a class by himself and, as his many biographies attest, remains a paradoxical genius. Universally proclaimed America's greatest architect, Wright was an inspiration for countless aspiring practitioners, but even his closest imitators remained distant, both from the man and the spirit of his work. All of Wright's buildings could be called functional and yet to the observation of his mentor Louis Sullivan, "form follows function," Wright replied "so what?" Wright's career extended from the late nineteenth-century, when he worked in Sullivan's office, to the mid-1950s, when he designed the Guggenheim Museum. Few of his colleagues experienced the transition into a modern, urban America, and none were able to produce the quantity and quality of work. Wright's genius lay in his ability to use new materials and capitalize on the machine without abandoning old materials, history, and the intangible qualities of life. His greatest achievements include the luxurious Prairie Style house, the economical Usonian house, Falling Water and the Johnson Wax Building, but all of his buildings are noteworthy. Wright received the Royal Gold Medal of the R.I.B.A. in 1941 and the A.I.A. gold medal in 1949.

Selected Works:

Wright House and Studio, Oak Park, Illinois, 1889-1909 (NHL)
Dana House, Springfield, Illinois, 1904 (NHL)
Martin House, Buffalo, New York, 1904 (NHL)
Larkin Building, Buffalo, New York, 1906
Unity Temple, Oak Park, Illinois, 1906 (NHL)
Coonley House, Riverside, Illinois, 1909 (NHL)
Robie House, Chicago, 1909 (NHL)
Taliesin, Spring Green, Wisconsin, 1911-1938 (NHL)
Hollyhock (Barnsdall) House, Los Angeles, 1921
Storer House, West Hollywood, California, 1923
Ennis House, Los Angeles, California, 1924
Millard House, Pasadena, California, 1924
Jacobs House, Madison, Wisconsin, 1936
Johnson Wax Company, Racine, Wisconsin, 1949 (NHL)
Fallingwater, Bear Run, Pennsylvania, 1936 (NHL)
Jacobs House, Middleton, Wisconsin, 1948
Morris Shop, Maiden Lane, San Francisco, 1949
Taliesin West, Scottsdale, Arizona, 1938-1959 (NHL)
Price Tower, Bartlesville, Oklahoma, 1956
Guggenheim Museum, New York, 1959
Marin County Civic Center, San Rafael, California, 1957-1972 (with Taliesen Associates)

Sources: Levine, Neil. *The Architecture of Frank Lloyd Wright.* Princeton, 1996; Meehan, Patrick J., ed., *Truth Against the World: Frank Lloyd Wright Speaks for an Organic Architecture.* New York, 1987; Murphy, Wendy Buehur, *Frank Lloyd Wright.*

Englewood Cliffs, New Jersey, 1990; Scully, Vincent, Jr. *Frank Lloyd Wright.* New York, 1960.

*A.I.A. Honor Award Winner

EXCEPTIONAL MODERN ARCHITECTS ("B" LIST)

Gregory Ain (1908-1988)

Dunsmuir Flats, Los Angeles, 1937
Park Planned Homes, Altadena, California, 1946
Avenel Housing Group, Silver Lake, Los Angeles, 1948
Mar Vista Housing Development (100 houses), Los Angeles, 1948
Wilfong House, Los Angeles, 1949 (Joseph Johnson, Alfred Day, associated)

Robert Evans Alexander (1907-1993)

Baldwin Hills Village, Los Angeles (with Wilson, Merrill, and Reginald D. Johnson, Clarence Stein, consultant), 1935-1942
Demonstration Elementary School, University of California, Los Angeles, 1948
Orange Coast College, Costa Mesa, California, 1948-55
Residence Halls, Revelle College, University of California, San Diego, 1966

Anshen and Allen (S. Robert Anshen, -1964;William Stephen Allen,-1989)

Chapel of the Holy Cross, Sedona, Arizona, 1956
Quarry Visitor Center, Dinosaur National Monument, Jensen, Utah, 1956-58

Edward Larrabee Barnes (1915-

Weiner House, Fort Worth, Texas, 1952
Camp Bliss, Fishkill, New York, 1955
Haystack Mountain School of Arts and Crafts, Deer Isle, Maine, 1962
W. D. Richards Elementary School, Columbus, Indiana, 1964-66 (with Thomas Dorste)
State University of New York, plan and major buildings, Purchase, 1968-78

Welton David Becket (1902-1969)

Bullock's, Pasadena, California, 1947*
Bercu Pipe Shop, Los Angeles, 1949*
Standard Federal Savings and Loan Association, Los Angeles, 1953*
Police Facilities Building, Civic Center, Los Angeles, 1956* (J. E. Stanton, Associate)
Tradewell Market, Burien, Washington, 1959* (Rushmore & Woodman, Associates)

Pietro Belluschi (1899-1994)

Portland Art Museum, Oregon, 1932
Equitable Savings & Loan, Portland, 1948

First Presbyterian Church, Cottage Grove, Oregon, 1951
Temple Israel, Swampscott, Massachusetts, 1956 (with Carl Koch & Associates)
First Lutheran Church, Boston, 1957
Church of the Redeemer, Baltimore, 1958 (& Rogers, Taliaferro & Lamb, Associates)
Juilliard School of Music and Alice Tully Hall, Lincoln Center Plaza, New York, 1969 (with Eduardo Catalano & Helge Westermann)

Charles Warren Callister (1918-

First Church of Christ Scientist, Belvedere, California, 1954

Eduardo Catalano (1917-

Catalano House, Raleigh, North Carolina, 1954

Mario Ciampi (1907-

Elementary School, Sonoma County, California, 1958*
Westmoor High School, Daly City, California, 1958*
Fernando Rivera Elementary School, Daly City, California, 1960 (1961*) (Paul Reiter, Associate)
Oceana High School, Pacifica, California, 1964
Saint Peter's Roman Catholic Church, Pacifica, California, 1964

Vernon DeMars (1908-

Agricultural Workers' Community at Chandler, Arizona, 1936 (Burton D. Cairns & Vernon DeMars)
Massachusetts Institute of Technology, Eastgate Apartments, Cambridge, 1950* (with Robert Woods Kennedy, Carl Koch, Ralph Rapson, William Hoskins Brown)
Wurster Hall, University of California, Berkeley, 1965 (DeMars, Esherick & Olson)
UC Student Center Complex, University of California, Berkeley, 1960-1968 (DeMars & Reay; Hardison & Komatsu, DeMars & Wells)

Alden B. Dow (1904-1983)

Midland Country Club, Michigan, 1930
Dow Studio, Midland, Michigan, 1934
First Methodist Church, Midland, Michigan, 1949*

Charles Eames (1907-1978)

Eames House (case study house for *Arts and Architecture* magazine), Pacific Palisades, California, 1949
Entenza House, Pacific Palisades, California, 1949
Herman Miller Showroom, Los Angeles, 1949
Museum of Science and Industry, Los Angeles, 1961

Craig Ellwood (1922-1992)

Case Study House 16, Los Angeles, 1951
Courtyard Apartments, Hollywood, California, 1952
Rosen House, Los Angeles, 1961
Scientific Data Systems Building (now Xerox), El Segundo, California, 1966

Joseph Esherick (1914-1998)

Esherick House, Ross, California, 1940
Bermak House, Oakland, California, 1963
University of California, College of Environmental Design, Wurster Hall, Berkeley, 1965 (with Vernon De Mars and Donald Olsen)

Ulrich Franzen (1921-

Franzen House, Rye, New York, 1956
Barkin Levin Factory, New York, 1958
Beattie House, Great Neck, Long Island, 1958*
Alley Theater, Houston, Texas, 1965
Agronomy Building, Cornell University, Ithaca, 1966-68

Albert Frey (1903-1998)

Aluminaire House, Central Islip, New York, 1931

Geddes Brecher Qualls Cunningham (Robert Geddes, 1923-

Moore School of Electrical Engineering, University of Pennsylvania, Philadelphia, 1958 (1960*) (Geddes, Brecher, Cunningham)
Police Headquarters, Philadelphia, 1962
Institute for Advanced Studies, Princeton, New Jersey, 1968-72

Bruce Goff (1904-1982)

Colmorgan House, Glenview, Illinois, 1937
Unseth House II, Park Ridge, Illinois, 1940
Ford House, Aurora, Illinois, 1950
Hopewell Baptist Church, near Edmond, Oklahoma, 1952
Bavinger House, Norman, Oklahoma, 1955
Freeman House, Joplin, Missouri, 1957
Pollock House, Oklahoma City, Oklahoma, 1958
Redeemer Lutheran Church Education Building, Bartlesville, Oklahoma, 1959
Dace House, Beaver, Oklahoma, 1964

Charles Goodman (1906-1992)

Radin House, Hollin Hills, Alexandria, Virginia, 1954*
Goodman House, Alexandria, Virginia, 1955*

Victor Gruen (1903-1980)

Northland Shopping Center, Detroit, MI, 1954*
Financial Plaza of the Pacific, Honolulu, 1969 (with Leo S. Wou)

Harwell Hamilton Harris (1903-1990)

Weston Havens House, Berkeley, California, 1941
Wyle House, Ojai, California, 1948
Ralph Johnson House, Los Angeles, 1951
Eisenberg House, Dallas, 1958
Greenwood Mausoleum, Fort Worth, 1959

Harrison & Abramovitz (Wallace Harrison, 1895-1981; Max Abramovitz, 1908-)
Corning Glass Center, Corning, New York, 1951* (Harrison, Abramovitz & Abbe)
United Nations Headquarters, New York, 1953
Alcoa Building, Pittsburgh, 1952 (Mitchell & Ritchey, Altenhof & Brown, assoc.)
Interfaith Center, Brandeis University, Waltham, Massachusetts, 1955*
Mobil Building, New York, 1956
Assembly Hall, University of Illinois, Champaign-Urbana, 1963
Lincoln Center for the Performing Arts, New York(Harrison & Abramovitz and Philip Johnson), 1962-68

Hellmuth, Obata & Kassabaum (George F. Hellmuth, 1907-; Gyo Obata, 1923-; George E. Kassabaum, 1920-)
Church of St. Sylvester, Eminence, Missouri, 1954
Priory of St. Mary and St. Louis, Creve Coeur, Missouri, 1962

Howe & Lescaze (George Howe, 1886-1955; William Lescaze, 1896-1969)
Philadelphia Savings Fund Society Building, Philadelphia, 1932

John MacL. Johansen (1916-
Johansen House, New Canaan, Connecticut, 1949
Bridge House, Fairfield, Connecticut, 1958
Clowes Memorial Symphony Hall, Indianapolis, (Butler University), 1964
Morris Mechanic Theater, Baltimore, 1967

A. Quincy Jones (1913-
Mutual Housing, Los Angeles, 1950 (1951*) (with Whitney Smith, Edgardo Contini)
Hvistendahl House, San Diego, 1950*
St. Matthew's Episcopalian Church, Pacific Palisades, California, 1953* (& Frederick E. Emmons)
Emmons House, Pacific Palisades, California, 1955*
Jones House, Los Angeles, 1955*
Biological Sciences Building, University of California at Santa Barbara, 1959
University Research Library, UCLA, 1964 (& Frederick E. Emmons)
Graduate Research Library, University of Hawaii, Manoa Campus, Honolulu, 1968 (& Frederick E. Emmons; Hogan & Chapman)

E. Fay Jones (1921-
Thorncrown Chapel, Eureka Springs, Arkansas, 1980 (NHL)

Mildred B. Cooper Memorial Chapel, Bella Vista, Arkansas, 1988

Albert Kahn (1869-1942)

Fisher Building, Michigan, (NHL)
Ford Glass Plant, Dearborn, Michigan, 1922
William L. Clements Library, University of Michigan, Ann Arbor, 1923
Edsel Ford House, Grosse Point, Michigan, 1927
Dodge Half-Ton Truck Plant, Warren, Michigan, 1937
Chrysler Truck Plant, Warren, Michigan, 1938
Ohio Steel Foundry, Lima, Ohio, 1938

George Fred Keck (1895-1980) and William Keck (1908-

House of Tomorrow, Century of Progress Exposition, Chicago, 1933
Kunstadter House, Highland Park, Illinois, 1952*
Gray House, Olympia Fields, Illinois, 1958
Hirsch House, Highland Park, Illinois, 1963

Killingsworth, Brady and Smith

Architects' Office, Long Beach, California, 1955*
Triad Case Study Houses, La Jolla, California, 1960
Opdahl Residence, Long Beach, California, 1960*
Kahala Hilton Hotel, Honolulu, 1963

Carl Koch (1912-

Snake Hill-Group of Eight Houses, Belmont, Massachusetts, 1942 (with Hudson Jackson & Robert Kennedy)
Prefabricated House, Concord, Massachusetts, 1948*
Acorn Prefabricated House, Weston, Massachusetts, 1953*

Kocher & Frey (Alfred Lawrence Kocher, 1885-1969; Albert Frey, 1903-)

Aluminaire House, 1931
Studies Building, Black Mountain College, North Carolina, 1943

John Lautner (1911-1994)

Malin (Chemosphere) House, Los Angeles, 1960
Silvertop, Los Angeles, 1963
Elrod House, Palm Springs, 1968

Victor A. Lundy (1923-

St. Paul's Lutheran Church, Sarasota, Florida (1959/1968-69)
Unitarian Meeting House, Hartford, Connecticut, 1963-64)

Cliff May (1908-1989)

John A. Smith House, La Habra, California, 1934-36
Cliff May House, Los Angeles, 1952-6
"Low-cost House," 1952-53 (with Chris Choate, 1905-81)

Erich Mendelsohn (1887-1953)

B'nai Amoona Synagogue and Community Center, St. Louis, Missouri, 1950
Maimonides (Mount Zion) Hospital, San Francisco,1950
Russell House, Pacific Heights, San Francisco, 1951
Park Synagogue and Community Center, Cleveland, Ohio, 1952
Temple Emanuel, Grand Rapids, Michigan, 1953

Mitchell/Giurgola (Ehrman Mitchell, 1924-; Romaldo Giurgola, 1924-)

Crockett House, Corning, New York, 1958
Wright Brothers National Memorial Visitor Center, Kill Devil Hills, North Carolina, 1958-60 (NHL)
Steine House, Bryan, Ohio, 1959
University of Pennsylvania parking garage, Philadelphia, 1964
United Fund Headquarters, Philadelphia, 1971

Eliot Noyes (1910-1977)

Noyes House, New Canaan, Connecticut, 1957*
IBM Laboratory, Garden City, NY, 1963
Southside Junior High School, Columbus, Indiana, 1969

Pereira & Luckman (William L. Pereira and Charles Luckman)

CBS Television City, Los Angeles, California, 1952*
National Bureau of Standards, Bouler Laboratories, Boulder, Colorado, 1953* (and J.E. Stanton, Robert W. Ditzen, Associate)
Beckman/Helipot Corporation Plant, Newport Beach, California, 1956*
Robinson's Specialty Shop, Palm Springs, California, 1958*

Ralph Rapson (1914-

Tyrone Guthrie Theater, Minneapolis, 1963 (& Associates)
Performing Arts Center, University of California at Santa Cruz, 1968

Kevin Roche (1922-, John Dinkeloo (1918-1981) & Associates

Oakland Museum, Oakland, California, 1961-68
Ford Foundation Headquarters, New York, 1967
Knights of Columbus Headquarters, New Haven, 1965-69

Paul Rudolph (1918-1997)

Albert Siegrist House, Venice, Florida, 1949 (R. S. Twitchell & Rudolph)
Healy Guest House, Sarasota, Florida, 1950 (Twitchell & Rudolph)
Roberta Finney House, Sarasota, Florida, 1950*(Twitchell & Rudolph)
Cohen House, Sarasota, Florida, 1956
Jewett Art Center, Wellesley College, Massachusetts, 1958 (with Anderson, Beckwith & Haible)
Milam House, St. John's County, Florida, 1963
Art and Architecture Building, Yale University, New Haven, Connecticut 1963

Tuskegee Institute Chapel, Tuskegee, Alabama, 1969

Rudolf Schindler (1887-1953)

Schindler House, West Hollywood, California, 1922
Lovell Beach House, Newport Beach, California,1926
Wolfe House, Avalon, Catalina Island, 1928
Rodkiewicz House, Los Angeles, 1937
Dekker House, Canoga Park, California, 1940
Toole House, Palm Village, California, 1947
Tischler House, Los Angeles, California, 1949

Paul Schweikher (1903-1997)

Schweikher House, Rosell, Illinois, 1938
Upton House, Scottsdale, Arizona, 1950 (Schweikher & Elting)

Jose Luis Sert (1902-1983)

Holyoke Center, Cambridge, Massachusetts, 1958-67 (Sert Jackson & Associates)
Sert House, Cambridge, Massachusetts, 1959
Peabody Terrace Married Student Housing, Harvard University, Cambridge, Massachusetts (Sert, Huson Jackson & Ronald Gourley), 1963-65
Undergraduate Science Center, Harvard University, Cambridge, Massachusetts, 1970-73 (Sert Jackson & Associates)

Paolo Soleri (1919-

Desert House, Cave Creek, Arizona, 1951 (with Mark Mills)
Earth House, Paradise Valley, Arizona, 1956
Arcosanti, Arizona, 1970s

Raphael Soriano (1904-1988)

Builder's House, Mill Valley, California, 1949*
Olds House, Los Angeles, California, 1950* (Case study house for Arts and Architecture Magazine)
Colby Apartments, Los Angeles, 1950
Curtis House, Los Angeles, 1950
Shulman House, Los Angeles, 1950
Krause House, Whittier, California, 1952*
Adolph Building, Burbank, California,1953

Edward Durell Stone (1902-1978)

Mandel House, Mount Kisco, New York, 1930
Conger Goodyear House, Old Westbury, New York, 1938
Museum of Modern Art, New York, 1939 (with Philip Goodwin)
Stuart Pharmaceutical Company, Pasadena, California, 1956 (1958*)
Kennedy Center for Performing Arts, Washington, D.C., 1959

Palo Alto Medical Center, nursing wing, Stanford University, Palo Alto, California, 1959
Huntington Hartford Museum, New York, 1964

Oskar Stonorov (1905-1970)
Carl Mackley Houses, Philadelphia, 1932 (with Alfred Kastner & W. Pope Barney)
Carver Court Housing, Coatsville, Pennsylvania, 1941-43 (with Howe and Kahn)
Schuylkill Falls Public Housing Project, Philadelphia, Pennsylvania, 1955

Hugh A. Stubbins, Jr. (1912-)
Adams House, Concord, Massachusetts, 1947*
Country School, Weston, Massachusetts, 1952
Francis A. Countway Library of Medicine, Boston, 1965 (& Associates)

Paul Thiry (1904-1993)
Church of Our Lady of the Lake, Seattle, Washington, 1941

Robert Venturi (1925-
Guild House, Philadelphia, Pennsylvania, 1961
Vanna Venturi House, Chestnut Hill, Pennsylvania, 1964

John Carl Warnecke (1919-
Mira Vista Elementary School, Richmond, California, 1951*
White Oaks Elementary School Annex, San Carlos, California, 1953*
Mark Thomas Inn and Additions, Monterey, California, 1954-55*
Asilomar Housing, Pacific Grove, California, 1959*
Willow Creek Apartments, Palo Alto, California, 1960*
Mabel McDowell Elementary School, Columbus, Indiana, 1962
John F. Kennedy Grave, Arlington National Cemetery, Washington, D.C., 1965

Harry Mohr Weese (1915-1998)
US Embassy Housing, Accra, Ghana, 1958
Eugenie Lane Apartments, Chicago, 1962
First Baptist Church, Columbus, Indiana, 1965 (NHL)
Time-Life building, Chicago, 1968
Washington MTA stations, Washington DC, 41 stations, 1970s

Philip Will, Jr. (1906-1985) (Lawrence B. Perkins)
Steel House, General Houses, Inc., Century of Progress Exposition, Chicago, 1933
Rugen Elementary School, Glenview, Illinois, 1946* (Perkins & Will)
Keokuk Senior High School and Community College, Keokuk, Iowa, 1953* (Perkins & Will)

Norman High School, Norman, Oklahoma, 1954* (Perkins & Will; Caudill, Rowlett, Scott and Associates)
International Minerals & Chemical Corporation, Administrative and Research Center, Skokie, Illinois, 1958*

Lloyd Wright (1890-1978)

Wayfarers Chapel, Palos Verdes, California, 1951

William Wilson Wurster (1895-1973) (Theodore Bernardi & Donn Emmons)

Schuckl & Co. (Calif. Canners & Growers), Sunnyvale, California, 1942
Nowell House, Carmel, California, 1948* (Wurster, Bernardi & Emmons)
Bernardi House, Sausalito, California, 1951*
Monterey Public Library, Monterey, California, 1952
Nowell House, Stockton, California, 1953 (1956*)
Center for Advanced Study in Behavioral Science, Palo Alto, California (Stanford University), 1955 (1956*)
Ritter House, Atherton, California, 1957
Dawson House, Los Altos, California, 1958

Minoru Yamasaki (1912-1986)

David Feld Medical Clinic, Detroit, Michigan, 1954* (Yamasaki, Leinweber, Assoc.)
Terminal Building, Lambert Airport, St. Louis, Missouri (with George Hellmuth, Joseph Leinweber), 1956*
McGregor Memorial Community Conference Center, Detroit, Michigan, Wayne State University, 1958 (1959*)
Benjamin Franklin Junior High School, Wayne, Michigan, 1959*
Reynolds Metals Regional Sales Office, Southfield, Michigan, 1961*
North Shore Congregation Israel, Chicago, 1964
Woodrow Wilson School, Princeton, New Jersey, 1964

*A.I.A. Honor Award Winner

ADDITIONAL MODERN BUILDINGS RECOMMENDED FOR NHL STATUS

Salk Biological Research Institute, La Jolla, California, Louis Kahn

General Motors Technical Center, Warren, Michigan, Eero Saarinen

Deere & Company Administrative Center, Moline, Illinois, Eero Saarinen

Dulles Airport, Chantilly, Virginia, Eero Saarinen

TWA Terminal, JFK International Airport, Eero Saarinen

Dodge Half-Ton Truck Factory, Detroit, Albert Kahn

Dorton Arena, North Carolina, Matthew Nowicki

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[1] John Jacobus, Jr., *Philip Johnson* (New York: George Braziller, 1962), 15-16.
[2] Thomas A. P. Van Leeuwen, "The Skyward Trend of Thought: Some Ideas on the History of the Methodology of the Skyscraper," in *American Architecture: Innovation and Tradition.* David G. Delong, et al, eds., New York: Rizzoli, 1986.
[3] The building also featured a two-story castellated tower. See Richard Webster, *Philadelphia Preserved* (Philadelphia: Temple University Press, 1976), 81.
[4] The first elevator or "steam lift" was developed in 1857 by Elisha Graves Otis and installed in the five-story Haughwout Building (1956-1957) in New York. The steam lift was introduced to Chicago in 1864. C. W. Baldwin invented the first hydraulic lift in 1870.
[5] Henry-Russell Hitchcock, *Architecture: Nineteenth and Twentieth Centuries* (New York: Penguin Books, 1958, Reprint, 1985), 335.
[6] Le Baron Jenney's second Leiter building, completed in 1880, is a National Historic Landmark.
[7] William H. Jordy, *American Buildings and Their Architects: Progressive and Academic Ideals at the Turn of the Century* (New York: Doubleday & Company, 1972), 38.
[8] Jordy, *American Buildings and Their Architects: The Impact of European Modernism* (New York: Oxford University Press, 1986), 59.

[9] The Chicago Tribune Tower was erected in 1923-1925 on Michigan Avenue.
[10] Ada Louis Huxtable describes the difference between modern skyscrapers, the avant-garde International Style borrowed from Europe, and the modernistic, which we now refer to as Art Moderne or Deco. See Ada Louis Huxtable, The Tall Building Artistically Reconsidered: the Search for a Skyscraper Style (New York: Pantheon Books, 1982), 39-44.
[11] Marcus Whiffen and Frederick Koeper, *American Architecture: 1860-1976* (Cambridge, Mass.: M.I.T. Press, 1987), 337.
[12] Hitchcock, *Architecture*, 622.
[13] Hitchcock, *Architecture*, 561.
[14] One of the most widely praised skyscrapers of the 1960s is the Ford Foundation (1967), New York, Kevin Roche, John Dinkeloo & Associates. Architectural historian Carter Wiseman remarks that it "made a major contribution to humanizing modernism," with its public atrium visible from the street. According to Wiseman, the firm's later buildings did not live up to this standard. See Wiseman, *Shaping a Nation*, 319.
[15] *AIA Journal* (July 1976): 152.
[16] Ada Louise Huxtable, "Skyscrapers," in *Built in the U.S.A.* Diane Maddex, ed. Washington, D.C.: National Trust for Historic Preservation, 1985.
[17] Vincent Scully, "American Houses: Thomas Jefferson to Frank Lloyd Wright," in Edgar Kaufmann, Jr., ed., *The Rise of an American Architecture* (New York: Praeger Publishers, 1970), 163-164.
[18] James F. O'Gorman, *Three American Architects: Richardson, Sullivan, and Wright, 1865-1915* (Chicago: University of Chicago Press, 1991), 58-59.
[19] O'Gorman, *Three American Architects*, 59.
[20]Carter Wiseman, *Twentieth-Century American Architecture: The Buildings and Their Makers* (New York: W.W. Norton, 2000), 77.
[21] Scully, "American Houses," 186.
[22] For more information about the textile houses, particularly La Minatura, see Neil Levine, *The Architecture of Frank Lloyd Wright* (Princeton: Princeton University Press, 1996), 114-169.
[23] The house was designed for Philip Lovell, a "naturopath" who practiced medicine without drugs and had acquired a large public following. See Thomas S. Hines, *Richard Neutra and the Search for Modern Architecture* (Berkeley: University of California Press, 1982), 89.
[24] F.R.S. Yorke, *The Modern House* (Great Britain: The Architectural Press, 1935), 208.
[25] Marcus Whiffen and Frederick Koeper, *American Architecture, Volume 2: 1860-1976* (Cambridge, Mass.: MIT Press, 1987), 343.
[26] Wiseman, *Twentieth-Century American Architecture*, 278.
[27] Alice T. Friedman, *Women and the Making of the Modern House* (New York: Harry N. Abrams, 1998), 134.
[28] Whiffen and Koeper, 374.
[29] Diana Ketcham, "A Sea Change Where the View Once Ruled," *New York Times* (Thursday, May 31, 2001), B1.
[30] Phoebe Stanton, "Religious Architecture," in *Built in the U.S.A.* (Washington, D.C.: National Trust for Historic Preservation, 1985), 141.
[31] O'Gorman, *Three American Architects*, 25.
[32] Cram was "considered the foremost church architect in the United States in the first decades of the twentieth century" and "firmly believed in the need to search the past for inspiration for new buildings…." See Marilyn J. Chiat, *America's Religious Architecture* (New York: John Wiley and Sons, 1997), 120.
[33] Jordy, *American Buildings and Their Architects, vol. 5: The Impact of European Modernism in the Mid-Twentieth Century*, 303.
[34] Hitchcock, *Architecture: Nineteenth and Twentieth Centuries*, 451.
[35] See Joseph M. Siry, *Unity Temple: Frank Lloyd Wright and Architecture for Liberal Religion* (Cambridge: Cambridge University Press, 1996), 245-6.
[36] Albert Christ-Janer and Mary Mix Foley, *Modern Church Architecture* (New York: McGraw Hill Books, 1962), 257.
[37] Christ-Janer and Foley, *Modern Church Architecture*, 153. The authors cite a "poll of 35 leading architects, editors, and specialists in church design, conducted by the National Council of Churches," that

"voted Christ Lutheran in Minneapolis the best church erected in the United States during the preceding 25 years."
[38] Christ-Janer and Foley, *Modern Religious Architecture*, 103.
[39] Neil Levine, Frank Lloyd Wright, 425.
[40] Siry, *Unity Temple*, 244.
[41] William Allin Storrer, The Architecture of Frank Lloyd Wright (Cambridge: The M.I.T. Press, 1974), 399.
[42] Mark Gelernter, 275-276.
[43] Marcus Whiffen and Frederick Koeper, *American Architecture, volume 2*, 382.
[44] Henry Russell Hitchcock, *The Pelican History of Art*, 569.
[45] John M. Jacobus, Jr. *Philip Johnson* (New York: George Braziller, 1962), 41.
[46] Thomas S. Hines, *Richard Neutra and the Search for Modern Architecture* (New York: Oxford University Press, 1982), 287.
[47] David B. Brownlee and David G. DeLong, *Louis I. Kahn: In the Realm of Architecture* (New York: Rizzoli International Publications, 1991), 143.
[48] Belluschi became the dean of MIT's architecture department in 1951, and was awarded the A.I.A. gold medal in 1972. For more information about his life and religious buildings see Meredith L. Clausen, *Pietro Belluschi: Modern American Architect* (Cambridge, Massachusetts: the MIT Press), 1994.
[49] Stimpson, *A Field Guide to Landmarks of Modern Architecture in the United States*, 208.
[50] Carole Rifkind, *Contemporary American Architecture*, 199.
[51] Paul Venable Turner, *Campus: An American Planning Tradition* (New York, 1984), 19-20.
[52] Turner, *Campus*, 227.
[53] Carter Wiseman, *Shaping a Nation*, 131.
[54] The Wrightian buildings at Florida Southern College include Annie Merner Pfeiffer Chapel (1938), T. R. Roux Library (1941), Three Seminar Buildings (1940), Industrial Arts Building (1942), Administration Building (1945), Science and Cosmography Building (1953) and Minor Chapel (Danforth Chapel), 1954. Buildings not connected by esplanades were added later and are by other architects. See William Allin Storrer, *The Architecture of Frank Lloyd Wright* (Cambridge, Mass.: M.I.T. Press, 1987), 251.
[55] John Jacobus, Jr., *Philip Johnson* (NY: George Braziller, 1962), 35.
[56] Paul Venable Turner, *Campus: An American Planning Tradition*, 267.
[57] Scully, *American Architecture and Urbanism*, 208-9.
[58] Rupert Spade, *Eero Sarrinen* (New York: Simon & Schuster, 1971), 122.
[59] Whiffen and Koeper, *American Architecture*, vol. 2, 391-393. Rudolph also designed the Married Students Housing for Yale in 1961.
[60] Scully, *American Architecture and Urbanism*, 208.
[61] Wiffen and Koeper, *American Architecture*, 405.
[62] Gowans, *Styles and Types of North American Architecture*, 313.
[63] Leland M. Roth, *A Concise History of Modern Architecture*, 308.
[64] Roth, *A Concise History*, 309.
[65] Jordy, *The Impact of European Modernism in the Mid-Twentieth Century*, 167.
[66] Gaines, *The Campus as a Work of Art*, 63.
[67] "College Buildings: St. John's, Science and Art in a Venerable Setting," *Architectural Record*, vol. 126, no. 3 (September 1959): 176-179.
[68] Jordy, *The Impact of European Modernism*, 382.
[69] Alan Gowans, *Styles and Types of North American Architecture* (New York: Harper/Collins, 1992), 306.
[70] Turner, 271, *Campus*.
[71] The firm of MLTW/Turnbull Associates & Charles W. Moore Associates worked on the project in the early 70s.
[72] Mildred F. Schmertz, ed. *Campus Planning and Design*, 147.
[73] Turner, *Campus*, 266.
[74] Helen Searing, *New American Art Museums* (New York: Whitney Museum of American Art, 1982), 27. In the 1990s the Wadsworth Athenaeum was renovated beyond recognition. Only the original façade remains.
[75] Furness designed the building with George W. Hewitt, his partner from 1871-1875.

[76] James F. O'Gorman, *The Architecture of Frank Furness* (Philadelphia: Philadelphia Museum of Art, 1973), 37.
[77] Searing, *New American Art Museums*, 38.
[78] For a brief description of the Springfield Museum of Fine Arts (originally the Gray Museum) See Searing, *New American Art Museums*, 44-47.
[79] Carol Rifkind, *A Field Guide to Contemporary American Architecture* (New York: Dutton, 1998), 155.
[80] See "Theme 4: The Modern College Campus" for further discussion of the Yale Art Gallery addition.
[81] Rifkind, *A Field Guide*, 158.
[82] Searing, *New American Art Museums*, 56.
[83] John M. Jacobus, Jr. (New York: George Braziller, 1962), 37.
[84] Paul Goldberger, *New Yorker* (December 23 and 30, 2002), 159. Goldberger's praise of the Kimball Art Museum is particularly significant in relation to his general opinion of 1960s-1970s museums: "If the museums are the keys to what our communities value…they present a confused picture of the American community right now…There is little in the way of a consistent philosophy, either of museum management or of architecture that one can glean from this potpourri [of museum designs]." See Helen Searing, *New American Art Museums*, 56.
[85] In *Modern Architecture Through Case Studies*, Peter Blundell Jones writes that the "breadth of concerns" addressed by the Kimball Art Museum "has few rivals this century: Wright, Aalto and Asplund come to mind, and Le Corbusier in late works like La Tourette. See Jones, *Modern Architecture* (Oxford: Architectural Press, 2002), 229.
[86] Neil Levine, *The Architecture of Frank Lloyd Wright* (Princeton: Princeton University Press, 1996), 355.